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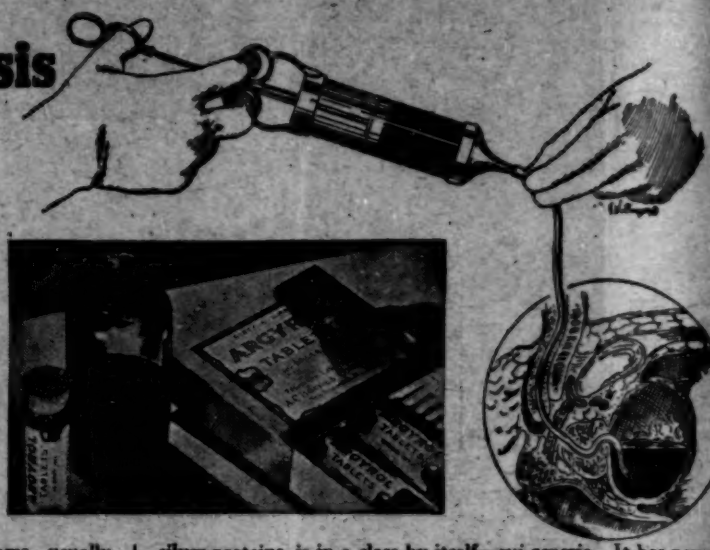

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BRITISH MEDICAL JOURNAL

LONDON SATURDAY OCTOBER 28 1944

THE NEED FOR ASEPSIS IN LOCAL PENICILLIN THERAPY

BY

WYLIE McKISSOCK, M.S., F.R.C.S. VALENTINE LOGUE, F.R.C.S., M.R.C.P.

AND

IAN BARTHOLOMEW, M.R.C.S., L.R.C.P.

(From a Neurosurgical Unit)

A study of the Preliminary Report to the War Office and Medical Research Council on Penicillin by Prof. Florey and Brig. Cairns (1943) reveals that Gram-negative organisms have been found in the discharge from penicillin-treated wounds. In some cases such organisms as *Bact. coli, Proteus vulgaris,* and *Ps. pyocyanea* have been grown from the aspirate from wounds receiving local injections of penicillin solution, and in others they have been cultured from pus issuing from similar wounds before healing was complete. Often enough the presence of such organisms, either in aspirated fluid or in purulent discharge, appeared to cause no serious complication or to delay healing unduly: on page 99, for example, it is stated: "Penetrating Brain Wounds.—The bacteriological results (Table II) usually showed that after two days' treatment of the brain cavity with penicillin Gram-positive cocci were no longer found in the fluid sucked or discharged from the wound; organisms of the coliform group were almost invariably present. In wounds which remained completely closed this state of affairs persisted until healing was complete." A further statement, on page 104, runs as follows: "For wounds more than a week old penicillin solution was usually used for 3 to 5 days. Though the end-result was satisfactory, and there was never any exacerbation of pre-existing infection as a result of closure, yet usually a sinus formed in some part of the wound and discharged pus for some days before it finally healed." Particular emphasis is laid upon *Ps. pyocyanea* as a common infective agent in such pus or wound aspirate in a paragraph on page 39: "In many wounds Gram-negative bacilli made their appearance during treatment. This was particularly so with *B. pyocyaneus,* which usually persisted until healing was complete"; and a more detailed description is given in the form of a brief case record (p. 102):

> "July 27: Operation—Free pus beneath the scalp. Brain fungus projecting through a dural opening (2 cm. diameter). Five bone chips removed from the brain to a depth of 2.5 cm. The resulting brain cavity held 5 c.cm. of penicillin solution. Scalp closed in two layers by a plastic procedure. One tube for penicillin solution; 9,000 units in six days. Bacteriological examination showed *Staphylococcus aureus* in swabs from all levels of the wound. July 29: Fluid aspirated from the wound shows in films pus cells and no organisms; on culture *B. pyocyaneus.* Aug. 1: Wound edges moist at one point. On aspiration, 25 c.cm. of thin blood-stained pus (culture: '*B. coli,*' *B. pyocyaneus*). Aug. 3: Culture of aspirated fluid—'*B. coli,*' *B. pyocyaneus,* enterococci. Aug. 11: Wound intact. To base."

On the other hand, more serious results could readily be anticipated, and we find on page 100 a description of a death (one of three in a series of 23) which is attributed to "an error of surgical technique":

> "At operation pus (*Staphylococcus aureus*) and necrotic material were found beneath the healing scalp, and the bone chips were removed. He was treated by local and intravenous or intramuscular penicillin for five days (5,000 units locally, 485,000 units parenterally). He became increasingly drowsy, and on the 10th day after operation his frontal wound was aspirated and 5 c.cm. of pus were obtained from beneath the skin. Films of this showed no organisms, and culture yielded only '*B. coli.*' He died on the following night.
>
> "At necropsy, beneath the intact frontal wound was a button of firm granulation tissue 2.5 by 0.3 cm. Beneath that in the right frontal lobe was a large thin-walled abscess 5 cm. in diameter and extending backwards above the right frontal horn for a distance of 12 cm. It was filled with pink pus. The ventricular wall was intact.
>
> "Section of the abscess wall showed numerous Gram-negative organisms, and in one place, where there had been a tiny spicule of retained bone, clumps and chains of Gram-positive cocci. The cellular components of the abscess wall showed nothing remarkable."

It is true that the overlooking of one small bony spicule may be regarded as an "error," but it is a mistake very hard to avoid on occasion. No comment, however, is made upon the growth of *Bact. coli* from pus aspirated from beneath the scalp: the presence of this penicillin-resistant organism may have played no small part in the development of the abscess and the subsequent death of the patient.

A point of considerable importance arising out of the quotations given above is the time at which such Gram-negative organisms gain entry to the wound. The suggestion has been made that they are present in the wound initially but are overgrown by staphylococci and streptococci in first cultures, and only when the latter organisms have been removed or inhibited in growth by penicillin therapy can the Gram-negative organisms be obtained in culture media. This supposition may well be true and cannot be denied.

One can, however, postulate that the presence of these Gram-negative organisms is but another example of added hospital or cross-infection of wounds. In the quotation given above from page 102 of the Preliminary Report it will be seen that *Staph. aureus* was grown from swabs taken from all layers of the wound at operation: two days later fluid aspirated from the wound grew *Ps. pyocyanea,* five days afterwards the aspirate grew in addition *Bact. coli,* and on the seventh post-operative day *Bact. coli, Ps. pyocyanea,* and enterococci were cultured. In this case three different organisms appeared in the course of five days, during which time the wound was aspirated on three occasions, and, in view of the repeated aspirations, the possibility of cross-infection obviously existed.

The emphasis laid upon the presence of *Ps. pyocyanea* is rather unusual, for this organism is not commonly grown, in our experience, from swabs taken pre-operatively from traumatic wounds. In a period of over three years, for example, preliminary wound swabs were taken from a series of 247 patients with traumatic lesions, and in only 2 cases was *Ps. pyocyanea* grown—once in pure culture and once associated with haemolytic streptococci and micrococci.

Bact. coli, Proteus vulgaris, and *Ps. pyocyanea,* however, are well-known as infecting agents in hospital or cross-infection of wounds (McKissock, Wright, and Miles, 1941), and it is more reasonable to assume, therefore, unless or until proof to the contrary is forthcoming, that the appearance of these Gram-negative organisms in a post-operative wound is due to added or hospital infection.

The opportunity for cross-infection of a wound undergoing treatment with penicillin solution is particularly good. A rubber tube runs from the outside air to the depths of the wound, and through this channel injections of the penicillin solution are made, usually twice daily, for from 3 to 5 days. Unless

Table of Results: First Series

Name	Wound	Pre-operative Wound Swab	X-ray	Time of Operation after Wounding	Operation	Penicillin Units	Sulphur Drug	Wound Healing	Stab Wound Healing	Hospital or Cross-infection (Potential)	Complications
PE.	3 mm. frontal	S. albus −	1 cm. defect. Bone fragments 3 cm. deep. Metallic F.B. much deeper	96 hours	Total excision except for metallic F.B. Closure in 2 layers	44,000 local 20,000 thecal in 5 days	36 g. in 5 days	2 days	8 days	None	None
ME.	7 cm. L. frontal	None	Metallic F.B.s in scalp. No fracture	98 hours	Total excision	10,000 local in 5 days	34 g. in 5 days	4 „	5 „	„	„
AM.	13 cm. L. fronto-parietal	„	8 cm. defect L. fronto-parietal. Bony F.B.s. Metallic F.B.s in brain	*72 (1) hours	(1) *Partial exc. and suture in 1 layer						
				107 (2) hours	(2) Clot removed P. tube inserted	39,000 local 19,000 thecal in 5 days	36 g. in 5 days	7 „	7 „	B. coli	„
				136 (3) hours	(3) Removal of clot. Reclosure in 2 layers						
SC.	8 cm. R. supra-orbital; brain exuding	Str. pyog.; S. albus; diphtheroids; spore-bearer	3 cm. defect R. frontal. Entering frontal sinus. Bony and metal F.B.s in frontal lobe	84 hours	Total excision. Closure in 2 layers	51,000 local 24,000 thecal in 5 days	37 g. in 5 days	5 „	8 „	„	„
KE.	1 cm. tri-radiate at vertex	None	4 × 3 cm. depressed fracture over longitudinal sinus	71 hours	Total excision. Closure in 2 layers	21 000 local in 5 days	36 g. in 5 days	2 „	7 „	None	„
WA.	10 cm. from R. side nose through eye to R. zygoma	S. albus −; B. coli	Comminuted fracture roof, lateral wall, and floor R. orbit. In-driven bone fragments	*24 (1) hours	*Partial excision. Wound left open						
				82 (2) hours	Total excision. Dura not closed. Closure in 1 layer	43,000 local in 5 days	36 g. in 5 days	½ of wound in 5 days; rest granulating still at 18 days	7 „	S. aureus +	None
DO.	Puncture L. supra-orbital	None	0·5 cm. defect L. frontal. 4 cm. penetration by bone. 8 cm. penetrating metal F.B.	34 hours	Total excision, except metal F.B. Closure in 2 layers	44,000 local in 5 days	37 g. in 5 days	3 days	9 „	None	Penetrating chest wound
AT.	2 cm. L. temporal	S. albus −	2 cm. bony defect. Metal F.B.s at 4–5 cm.	96 hours	Total excision, except deep metal F.B. Closure in 2 layers	37,000 local in 5 days	38 g. in 5 days	3 „	8 „	„	S albus meningitis. 13 days after op. further penicillin intrathecally
LY.	Puncture L. frontal	None	Metal F.B. in scalp	77 hours	Total excision. Removal F.B. Closure in 2 layers	22,000 local	27 g. in 5 days	2 „	7 „	„	None
HO.	Puncture R. parietal	„	1 cm. defect R. parietal. Bony F.B.s 3 cm. deep; metal F.B. 6 cm.	120 hours	Total excision except metal F.B. Closure in 2 layers	27,000 local	35 g. in 5 days	2 „	7 „	„	„
WR.	10 cm. across ant. parietal regions	S. aureus +; S. aureus −	3 cm. defect over meatus extending to L. Bony F.B.s in brain to 2 cm.	192 hours	Total excision. Closure incompletely in 2 layers	51,000 local in 5 days	35 g. in 5 days	5 „	10 „	„	—
LU.	1 cm. R. ant. parietal	None	1 cm. defect. Bony F.B.s to 2 cm.; metal F.B. 10 cm.	96 hours	Total excision, except metal F.B. Closure in 2 layers	30,000 local in 5 days	31 g. in 5 days	2 „	7 „	„	„
LA.	1 cm. mid. R. parietal	S. aureus +	1·5 cm. defect. Bony F.B.s to 2 cm.	90 hours	Total excision. Closure in 2 layers	21,500 local in 5 days	36 g. in 5 days	2 „	8 „	„	Haematoma in scalp evac. 5 days after op.
SM.	3 cm. V-shaped L. mid-parietal	P. vulgaris; S. albus; spore-bearers	2 cm. defect. Bony F.B.s to 2 cm.	112 hours	Total excision. Closure in 2 layers	36,000 local 25,000 thecal in 5 days	37 g. in 5 days	5 „	7 „	„	None
AL.	4 × 2 cm. mid-frontal	None	4 cm. depression midline frontal	*1	*Cleaned. Edges excised. Bone not touched.						
				96 (2) hours	Total excision. Closure in 2 layers	30,000 local in 5 days	37 g. in 5 days	2 „	7 „	„	„
JE.	8 cm. tear midline frontal	P. vulgaris; S. albus; spore-bearer	Nil except metal F.B.s in scalp	79 hours	Total excision. Closure in 2 layers	49,000 local in 5 days	39 g. in 5 days	11 „	11 „	„	„
AN.	2 cm. L. temporal	S. albus	2 cm. defect L. temp. Extradural bony F.B.s. V. small metal F.B.s in brain	108 hours	Excision down to dura only. Closure in 2 layers	32,000 local in 5 days	40 g. in 5 days	4 „	7 „	„	„
McG.	Puncture R. occipital	S. albus −	0·5 cm. defect R. occipital. Bony F.B.s to 3 cm. Metal F.B. 1·05 cm.	91 hours	Total excision, except metal F.B.	29,000 local in 5 days	35 g. in 5 days	2 „	7 „	„	„
WI.	1 cm. puncture level 9th rib post-axillary line	„	Bullet lying to side of fractured spine of D 12	56 hours	Total excision. Closure in 3 layers	72,000 local in 5 days	34 g. in 5 days	10 „	10 „	„	„
MA.	L. frontal puncture	„	Metal F.B. lying deep to L. zygoma	3 hours	Total excision. Closure in 1 layer	20,000 local in 5 days	35 g. in 5 days	4 „	8 „	„	„

* Indicates primary operation elsewhere.

unusual precautions are taken to safeguard this channel against bacterial contamination it is easy to imagine the common faecal organisms (which are penicillin-resistant) being carried into the wound at the time of injection.

The occurrence, therefore, of "Gram-negative" purulent discharge from post-operative wounds, side by side with a new portal of entry for hospital infection, is significant, and should lead us towards the conclusion that we are faced with

Table of Results: Second Series

Name	Wound	Pre-operative Wound Swab	X-ray	Time of Operation after Wounding	Operation	Penicillin Units	Sulphur Drug	Wound Healing	Stab Wound Healing	Hospital or Cross-infection (Potential)	Complications
HA.	1 cm. R. parietal	S. aureus	Circular depressed fracture	48 hours	Total excision	30,000 local in 5 days	30 g. in 5 days	3 days	7 days	—	—
AL.	0·5 cm. R. temporal	S. albus	2 cm. circular depressed fracture	48 hours	,, ,,	30,000 local in 5 days	30 g. in 5 days	5 ,,	7 ,,	—	—
DA.	2 cm. in eye and canthus	S. aureus	Comminuted roof orbit. Metal and bony F.B.s in R. frontal lobe	72 hours	Total excision except metal F.B.	44,000 local 135,000 thecal in 5 days	30 g. in 5 days	2 ,,	10 ,,	Ps. Pyocyanea	—
MA.	3 punctures, each ½ cm. temporal-occipital	,,	Small depressed temporal. Many bony F.B.s in brain. Metal F.B.s deeper	48 hours	,, ,,	46,000 local 80,000 thecal in 5 days	30 g. in 5 days	2 ,,	5 ,,	—	Died. Basal haemorrhage
GO.	8 cm. R. parietal	Sterile	2 × 3 cm. depressed fracture R. parietal	48 hours	Total excision	30,000 local in 5 days	30 g. in 5 days	3 ,,	6 ,,	—	—
LA.	1·5 cm. R. frontal	,,	1·5 cm. defect R. frontal. Many bony F.B.s down to 6 cm.	144 hours	,, ,,	41,000 local 459,000 I.M. in 5 days	30 g. in 5 days	3 ,,	7 ,,	—	—
HI.	3 cm. L. frontal	S. albus	1 cm. depressed L. frontal	36 hours	,, ,,	26,000 local in 5 days	30 g. in 5 days	3 ,,	7 ,,	—	—
LA.	5 cm. transverse at hair line; 1 cm. lateral to R. orbit	Sterile	2 cm. × 0·5 cm. depressed fracture, frontal	96 hours	,, ,,	10,000 local in 5 days	30 g. in 5 days	2 ,,	7 ,,	—	—
MO.	U-shaped 1 cm. R. eyebrow	S. albus	Fracture frontal sinus and ethmoids	48 hours	,, ,,	38,000 local in 5 days	30 g. in 5 days	2 ,,	6 ,,	Ps. pyocyanea	Haematoma in wound (sterile)
SI.	3–4 mm. L. parietal	,,	1 cm. defect L. parietal. Bony F.B.s in brain; Metal F.B. in R. side	72 hours	Total excision except metal F.B.		30 g. in 5 days	2 ,,	6 ,,	,,	None
ER.	2 cm. L. parietal	Sterile	1·5 cm. defect. Bony F.B.s in brain	48 hours	Total excision	19,000 local in 5 days	30 g. in 5 days	2 ,,	8 ,,	,,	,,
BE.	1 cm. R. parietal	S. aureus	1 cm. defect R. parietal. Bony F.B.s in brain; metal F.B. in L. side of skull	72 hours	Total excision except metal F.B.	50,000 local in 5 days	30 g. in 5 days	Not healed at 12 days	5 ,,	S. albus	,,
*HE.	7 cm. R. parietal and multiple punctures	Sterile	1·5 cm. defect R. fronto-parietal. Bony and metal F.B.s in brain	48 hours	,, ,,		30 g. in 5 days	14 days	14 ,,	Ps. pyocyanea	,, (*Hospital infection*)
HO.	8 cm. L. occipito-parietal	Ps. pyocyanea	3 × 1 cm. depressed fracture L. parietal	96 hours	Total excision	10,000 local in 5 days	30 g. in 5 days	3 ,,	7 ,,	None	None
MA.	3 cm. R. post-parietal	P. vulgaris	3 cm. defect R. post-parietal. Bony F.B.s in brain; metal F.B. in L. side	72 hours	Total excision, except metal F.B.	50,000 local 90,000 thecal in 5 days	30 g. in 5 days	2 ,,	7 ,,	,,	,,
WO.	5 cm. × 2 cm. R. parietal	Haemolytic staph.	Depressed fracture R. parietal	48 hours	Total excision	32,000 local in 5 days	30 g. in 5 days	2 ,,	6 ,,	—	,,
WR.	2 cm. R. frontal	P. vulgaris; non-haem. strep.	2 cm. R. frontal defect. Bony F.B.s in brain; metal F.B. much deeper	48 hours	Total excision, except metal F.B.	22,000 local 90,000 thecal in 5 days	30 g. in 5 days	2 ,,	6 ,,	None	Died. Large metal F.B. in area of softening in corpus callosum
JO.	7 cm. R. post-parietal	S. albus	2 cm. defect R. post-parietal. Bony and metal F.B.s in brain	48 hours	,, ,,	30,000 local in 5 days	30 g. in 5 days	4 ,,	7 ,,	,,	None
McR.	4 cm. L. post-parietal	Ps. pyocyanea	4 cm. defect L. parietal. Many bony F.B.s in brain	144 hours	Total excision	31,000 local 90,000 thecal in 5 days	30 g. in 5 days	7 ,,	7 ,,	Ps. pyocyanea	Wound breakdown
TA.	1 cm. midline occipital	Sterile	2 cm. defect R. post-parietal. Bony F.B.s in brain; Large metal F.B. deep	72 hours	Total excision, except metal F.B.	30,000 local 90,000 thecal in 5 days	30 g. in 5 days	2 ,,	7 ,,	B. proteus; haemolytic staph.	None

* Case of hospital infection.

another illustration of hospital infection of wounds, to add to the many already in existence.

It may be true that, in the vast majority of cases, added infection of the nature which we have been discussing leads to no more untoward result than a short-lived discharge, delaying healing only by a few days, but, in dealing with large numbers of patients, those few additional days in hospital amount to a very appreciable number over the course of a year. The inevitable result must be an unnecessary use of hospital beds, drugs and dressings, and the time of hospital personnel. Apart from such minor complications and delays, more serious sequelae will certainly occur in the neurosurgical field, even if in small numbers, for *Bact. coli*, *Proteus vulgaris*, and *Ps. pyocyanea* are all capable of producing meningitis or localized abscess.

A Short-term Experiment

It was with such thoughts in mind that a short-term experiment was undertaken to see whether these organisms need necessarily appear in penicillin-treated wounds or whether they could be excluded by methods designed to close the supposed new portal of entry (the penicillin tube) and by the other precautions against hospital infection of wounds already in use in the department (M.R.C. War Memoranda, 1941, 1944). No details of the ward and dressing technique in use need be given, for the basic principles have already been widely disseminated (Miles *et al.*, 1940), although far from extensively adopted.

To protect the penicillin tube from possible contamination the open end was closed with the metal valve and cap of a bicycle inner tube, the valve being cut short at the level of the side opening. This appliance could be sterilized and inserted into the tube before the introduction of the latter into the wound. Injections could subsequently be made through the metal valve using a syringe and needle, removing and replacing the screw cap each time, thus preventing soiling of the open end. Later a more satisfactory instrument was designed, the end of which accurately fitted a Record syringe, thus simplifying the giving of the twice-daily injections (McKissock, 1944).

The first 20 battle casualties from the Normandy campaign to be admitted to the department and treated with penicillin solution as a local injection were bacteriologically investigated. Swabs were taken before operation, at each subsequent dressing, and from the surface of the healed wound and surrounding scalp on the fifth day, when the penicillin tube was withdrawn. This last swab was taken to see what organisms were present on the scalp and healed linear wound surface, and were thus available to cross-infect the small 3–4 mm. stab wound from which the penicillin tube was later withdrawn.

It should be noted that these 20 cases were treated in a well-established neurosurgical unit with a numerically adequate, experienced, and well-trained nursing staff. Special attention had been paid to the education of the nursing personnel in all matters relating to ward and dressing technique and to the potentialities of hospital infection of wounds.

Shortly after the completion of the experiment, with the results which are given above (Table, First Series), the medical personnel of the unit, with a staff of theatre nurses only, were transferred to a hospital in the country to continue the treatment of battle casualties. The nursing staff of this hospital had had no previous experience of neurosurgical work or specialized ward and dressing technique, nor had they been extensively educated in matters relating to hospital infection. In these new surroundings it was felt that the risks of cross-infection would inevitably be greater, more especially as cases were admitted in much larger numbers and at shorter intervals. Under such circumstances many of the finer details in the avoidance of hospital infection (all, nevertheless, of considerable importance) could not be observed. It was decided, therefore, to investigate another similar series of 20 cases (Table, Second Series).

Roughly two-thirds of the 40 cases were operated upon by one surgeon (W. McK.) and one-third by the other (V. L.), the surgical technique in all essential details being the same throughout. Each patient received a five-day course of treatment with one of the sulphonamides, as follows: (1) All wounds were powdered with sulphanilamide before closure. (2) The first series received intravenous sulphathiazole for the first 24 hours, followed by sulphamezathine by mouth for a further four days. (3) The second series were given sulphathiazole by mouth for five days—sulphamezathine not being available—and because of the shortage of trained personnel no patient received intravenous medication.

Penicillin was administered as a sodium salt solution in a strength of 1,000 units per c.cm., given twice daily for 5 days. The average dose in the first series of 20 cases was just over 39,000 units and in the second about 31,000 units. The average lapse of time between wounding and operation was 94 hours in the first series and 67 hours in the second: healing of the wound was complete in an average of 5.25 and 3.5 days respectively in the two sets of cases. The stab wound through which the penicillin tube was invariably inserted healed in 7.75 days in the first series and 7.3 days in the second: as this tube remained *in situ* for five days healing was reasonably prompt in all cases.

Results

An analysis of the accompanying tables reveals that in three cases in the first series organisms which could not be cultured from swabs taken from the wound at the time of the pre-operative dressing were grown from the healed linear wound surface and surrounding scalp when the dressings were removed for the withdrawal of the penicillin tube, although in no case was there any evidence of infection of the wound or stab opening. In two of these cases the organism was *Bact. coli* and in one *Staph. aureus*. Healing of these three stab wounds was complete on the seventh, eighth, and seventh day respectively from the date of operation—i.e., two, three, and two days after removal of the penicillin tube on the fifth post-operative day. These three cases can be classed as potential hospital infections, although clinically they happened to be of no significance, as the wounds were already healed. These figures give a percentage rate of potential cross-infection of 15, the clinical cross-infection rate being 0.0%.

In the second series, under the changed domiciliary and nursing conditions, with the concomitant changes and lapses in ward and dressing techniques, new organisms were recovered from the healed wound surface and adjacent scalp in 7 cases of the 20 when the penicillin tube was withdrawn, giving a potential cross-infection rate of 35%. In only one of these seven cases did clinical evidence of actual cross-infection appear, giving a clinical cross-infection rate of 5% for this series of 20 cases. In five of the seven cases *Ps. pyocyanea* was grown, one produced the *Staph. albus*, and one grew *Proteus vulgaris* and a haemolytic staphylococcus.

The total average figures for the 40 cases are thus a 25% rate of potential cross-infection and a 2.5% rate of clinical cross-infection.

In the whole series of 40 cases there were thus 10 in which new organisms were grown, of which one case became clinically cross-infected, producing a profuse growth of *Ps. pyocyanea* and indicating very well the importance of the potential rate of hospital infection (25%); for, if the wounds had not healed so early, actual clinical infection might have taken place in every one of the ten cases. In the remaining nine cases, in which new organisms were found, the operation wounds were already healed, and the only portal of entry for the organisms to the deeper tissues would have been through the stab wound from which the penicillin tube had been removed. In the case actually and clinically infected there were upwards of a dozen superficial wounds (none reaching the galea) surrounding the wound overlying the fracture, none of which could be surgically excised. The exudate from these wounds formed a perfect pabulum in which the cross-infecting *Ps. pyocyanea* could flourish. The wounds were fortunately very superficial in character and healed in 14 days from the date of operation.

Commentary

It would seem, therefore, that in a department where adequate numbers of experienced and specially trained nursing personnel and reasonable structural facilities exist, actual hospital infection of battle wounds of the head may be almost entirely eliminated, although a constant potential threat of such complications will always remain. When there was a shortage of neurosurgically experienced nurses, and cases were admitted in greater numbers and at shorter intervals, the incidence of potential cross-infection rose from 15 to 35%, and one case (2.5%), the wound conditions of which were particularly suitable, became clinically cross-infected.

From these facts alone the desirability of obtaining proper skin-healing in the first two to four days is evident: a scalp wound closed with sparsely placed through-and-through sutures, especially when exposing portions of the subcutaneous tissue, provides ideal conditions for the entry and growth of organisms which may have found their way to the wound surface. Delay in healing, even if no worse calamity befalls, means an unnecessary waste of hospital time, a delayed convalescence for the patient with its risks of post-traumatic complications (either physical or mental), and an augmentation of the already overflowing reservoir of pathogenic bacteria in the hospital. It would appear that penicillin tubes need not give rise to cross-infection if closed with an aseptic screw cap of the design mentioned above, as no such trouble ensued in this series of forty cases.

The single case in which the wound broke down some days after healing was apparently complete and produced a profuse growth of *Ps. pyocyanea* showed a pure culture of the same organism from a swab taken pre-operatively. The first definite

surgery in this patient was performed six days after wounding, and at operation the wound was foul-smelling and semi-purulent, and contained a piece of wood two inches long firmly plugging the skull defect and penetrating deeply into the brain. Many bone fragments lay deep in the brain substance; two of them were still visible in post-operative radiographs, indicating that wound excision had been imperfect.

The non-occurrence of a cross-infective discharge from these 40 wounds (except in one case of superficial infection) clearly suggests that when such discharge occurs it is more probably due to hospital than to initial infection.

It has been shown by Cowan (1938) that organisms occurring in the air and normally regarded as saprophytes may be the cause of serious intracranial infection, and this was later emphasized by Cairns (1939) in reporting a series of 23 deaths from infection following intracranial operations. In Cairns's cases the various organisms isolated had previously been considered non-pathogenic to man and were thought to have gained access to the cerebrospinal fluid spaces from the air during the prolonged exposure of the brain necessitated by some neurosurgical procedures. The effect of introducing *Ps. pyocyanea*, or any other pathogen, into the brain or cerebrospinal fluid spaces can well be imagined, and would be a matter for serious concern. If, therefore, penicillin is to be given by the method of local instillation the precaution of using an aseptic cap for the tube should certainly be taken.

No reflection upon the nursing staff concerned in the treatment of the second series of cases is intended: they have shown a capacity for hard work and co-operation which is admirable, and they could not have been expected to adopt and maintain a specialized system of ward asepsis and antisepsis which has been gradually developed over a period of four years. Nor could so small a number of nurses, even if trained and experienced in neurosurgical work, hope to attain a high standard (i.e., a low potential rate of hospital infection) when confronted with large numbers of patients with serious head injuries, whose sole ambition appeared to be the immediate removal of their headdress.

Conclusion

We feel that attention to three main points is responsible for the very low rate of hospital or cross-infection of wounds in the above series. These points are: (1) The care taken in closing scalp wounds to obtain very early healing. (2) The insistence upon very careful ward and dressing technique as advocated in an earlier paper and the M.R.C. Memoranda on hospital infection. (3) The aseptic cap used to close the penicillin tube.

Summary

Two series of cases are reported, each of 20 battle casualties, in which local penicillin therapy was employed.

The incidence of potential cross-infection was three cases in 20 in the unit's original surroundings, and no clinical cross-infection occurred. In the second series, under less perfect conditions, the potential rate rose to seven cases in 20 (35%), and one superficial case of clinical hospital infection resulted (5%).

Cross-infection of wounds by way of the penicillin tube is an obvious possibility and, as it has not appeared in the present series (the one case described being only a superficial cutaneous infection), it is suggested that the aseptic screw cap in use is the responsible factor in prevention.

The need for proper closure of the scalp wound and very early skin-healing is emphasized in view of the total average potential hospital- (or cross-) infection rate (25%).

Our thanks are due to Dr. Lever and Dr. Cross, who carried out the necessary bacteriological investigation of the large number of wound swabs taken during the period under review, and whose admirable co-operation could not have been bettered.

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SOME MISTAKEN DIAGNOSES IN THE COMMON INFECTIOUS FEVERS

BY

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Recently I had occasion to go through the records of this hospital, and it occurred to me that it might be of general interest to sift carefully all those cases of "everyday" infectious disease in which my own diagnosis differed from that of the certifying practitioner. I have deleted all the doubtful cases, where almost anybody might be right: those to which I allude have been proved, so far as was possible, by bacteriological and pathological aids, for which I am indebted to Dr. Wordley of Plymouth, who is ever helpful in the elucidation of obscure medical problems.

Most senior practitioners will be well acquainted with the contents of this paper, but perhaps those who have had little opportunity for the study of infectious disease may derive some benefit. Many of us after qualification find the diagnosis of the infectious fevers difficult, and I am not sure that it becomes any easier the more cases one sees, with the consequent larger number of possibilities that arise with each fresh problem.

This brief review covers the last five years' admissions to the City Isolation Hospital, Plymouth, and includes 3,516 cases of diphtheria, 2,102 cases of scarlet fever, and a miscellany of 700 other diseases. I have tried to stress the clinical aspect throughout in view of the fact that pathological aid may well be wanting when needed most; but, naturally, in many of these cases the only ultimate proof lay with the laboratory, so it was essential to send these patients to a hospital where pathological facilities existed for full investigation. Nor do I wish to convey the impression that I am in any way critical of the differences mentioned, for I well know the heavy responsibility that rests with a practitioner who, perhaps living at a distance, is called to see some of these cases and is expected to give an infallible diagnosis in impossible surroundings within a few minutes. Quite rightly, he removes the case to where observation and treatment can be carried out under more favourable conditions. Still, there is always some satisfaction in making a correct mental diagnosis, irrespective of the administrative aspects of the disease.

Diphtheria

Diphtheria is the commonest infectious disease sent to the fever hospital in this district. I propose to divide the cases, 3,516 in all, into two groups—the faucial, nasopharyngeal, and nasal varieties, accounting for some 3,363 cases, and laryngeal, making up the remainder, a total of 153.

As can well be imagined, the commonest, safest, and most justifiable error in the first group is a diagnosis of tonsillitis. This occurs in 347 cases, or 72% of the total 483 mistaken diagnoses. Next comes scarlet fever, accounting for 14% (67 cases); and third on the list are various forms of Vincent's angina and stomatitis. The remainder is made up of the following diseases: Anginous form of glandular fever (4 cases), streptococcal cervical adenitis (4), post-tonsillectomy sloughs (2), chickenpox (1), purpura (1), secondary syphilis (1), alveolar abscess (1), mumps (1), thrush (1), acute lymphatic leukaemia (1), and, quite inexplicably, a toxic erythema, a tuberculous meningitis, a case of meningococcal meningitis, and an attempted suicide; but to this last case I shall allude later.

The clinical differentiation of acute tonsillitis from an early diphtheria may be extremely puzzling at the outset, and I have noticed during the last few years that it is increasingly common for diphtheria to start just like an early follicular tonsillitis, and at this stage it is almost impossible without bacteriological aid to make a sure diagnosis. The following points may be borne in mind when faced with such a case:

1. In diphtheria of this type the onset is insidious. I have had nurses with a vague uneasiness in their throats report to me with considerable follicular exudate on one or both tonsils who only thought that something might be wrong when they looked at their own throats. The constitutional disturbance, pain on swallowing,

tender glands, and pyrexia are all minimal at this stage. Frequently only one tonsil is affected, but within 12 hours the other shows signs of involvement, and within 24 hours the exudate has coalesced, leaving no doubt as to the true nature of the illness.

2. Coalescence is quite rapid in diphtheria—within 24 hours. A discrete exudate lasting two or three days is unlikely to be diphtheria. It follows, then, that a case which at first sight appears to be tonsillitis should always be inspected again on the following day, and the day after that if possible.

In *streptococcal sore throat* the onset is more sudden, the systemic disturbance more severe, and the temperature higher than in diphtheria. The cervical glands are very tender, the surface of the exudate is rough, pultaceous in consistency, and may be associated with intense congestion of the soft palate and adjacent tissues.

Quinsy is most likely to be confused with hypertoxic diphtheria, as in both diseases there is exudate on the tonsils and oedema of the fauces. Again, in diphtheria of similar severity there would be much greater glandular enlargement—probably even a bull neck—pallor, and nasal discharge. Quinsy is mostly unilateral and is often associated with great difficulty in opening the jaws, a most uncommon sign even in the severest types of diphtheria. Very occasionally diphtheria does occur with quinsy in the acute stage, but almost always it is a sequel after the throat has cleared of membrane, presumably due to the lessened resistance of the patient, both locally and generally, to secondary invading organisms.

Other kinds of sore throat are encountered occasionally, but the ones mentioned are those which commonly give rise to difficulty.

There seems to be an impression that the temperature in diphtheria is always normal or subnormal. This is by no means true, and in fact most cases show mild pyrexia of 100–101° during the first few days of the illness, particularly in children. The presence of fetor, on which again much reliance is placed, can be misleading, and septic sore throats or mixed infections with Vincent's organisms can sometimes produce an odour which to the inexperienced is a very good imitation of the diphtheritic smell.

Scarlet fever is the disease next most commonly confused with diphtheria; many of the cases are overlooked by omitting examination of the patient's skin, and so the rash is missed. Sometimes the rash may have disappeared by the time the doctor is called in, but a retrospective diagnosis is usually possible by consideration of the history of sudden onset with vomiting and sore throat, and the characteristic appearance of the throat, tongue, and skin. Sometimes undoubted scarlet fever occurs without a rash, but again the history will usually provide a clue. Occasionally both diseases coexist.

Vincent's angina has been especially prevalent during the last two or three years, but even before the war it accounted for some 4% of the errors of diagnosis. It occurs not at all uncommonly in children, but adults are the chief sufferers. The disease mostly affects one tonsil and is readily recognized clinically by the ulceration, the broken and crumbly appearance of the exudate, the typical smell, and the tender glands, which are often enlarged out of all proportion to the extent of the angina. It should be noted that diphtheria is often associated with Vincent's angina, and swabs as well as smears should be taken to confirm the diagnosis. Vincent's disease will also attack the gums and buccal mucosa, causing much swelling of the gingival margins, ulceration of the buccal mucous membrane, and the secretion of tenacious mucus, a condition I have never observed in diphtheria.

The differential diagnosis of the remainder of the diseases mentioned above—namely, secondary syphilis, acute leukaemia, purpura, post-tonsillectomy sloughs, and non-diphtheritic rhinitis—are all fairly obvious, but there are three to which I would like to allude briefly: glandular fever, chicken-pox, and the attempted suicide.

The anginous form of glandular fever may simulate diphtheria very closely in children. There is considerable exudate on the tonsils, with faucial oedema and enlarged glands in the neck. A striking difference is to be found in the consistency of the cervical glands on gentle palpation. Instead of being enlarged and firm, they have a peculiar elastic and resilient feeling, quite unlike those of diphtheria. Once one's suspicions have been aroused by this sign, further examination will in all probability reveal an enlarged spleen, adenopathy of other groups of lymph glands, and possibly some abdominal tenderness. A differential count will confirm the diagnosis, but, if a Paul-Bunnell test is done, blood should be taken before giving serum in doubtful cases, otherwise the result will be positive when in fact the true result might have been negative.

I have notes of several cases of chicken-pox misjudged as diphtheria. This has been due to a profuse crop of vesicles on the palate or uvula breaking down into coalescent ulcers. Again an examination of the skin would have settled the diagnosis.

Lastly, the attempted suicide, which is related merely as a matter of medical interest.

A man aged 45 was sent into this hospital certified as suffering from diphtheria. He had a curious-looking throat covered with dirty grey exudate, extending over the tonsils, faucial pillars, uvula, and soft palate. The mucous membrane of the cheek was involved, and it was quite easy to strip off this material, when a raw, sore area was left behind. I had never seen anything quite like it before. His general condition seemed good. He was not ill, but was rather confused in his manner. On further inspection I found a severe wrist wound on the left side which had evidently been self-inflicted by a sharp instrument—probably a safety-razor blade. The flexor longus pollicis had been divided but no large blood vessel injured. I taxed the man with attempted suicide, as by this time it was evident that he had swallowed some corrosive fluid and, perhaps finding this rather unpleasant, attempted a short cut, which was equally unsuccessful. He would admit nothing, but later I learned that he was heavily in debt and had been found wandering on several occasions.

Perhaps, however, laryngeal diphtheria is confused more than all the other kinds put together, with the possible exception of skin diphtheria. Out of 153 cases notified 38% proved not to be laryngeal diphtheria after investigation and observation. These difficulties are quite understandable, as the number of cases in the large fever hospitals has fallen very considerably in recent years and not many of the younger practitioners have had the opportunity of seeing these cases before qualification. In addition, a doctor called to see suspected cases of "croup" quite rightly errs on the safe side, so that a number of patients arrive at the hospital with this label who have no signs of the disease.

A bad faucial diphtheria with palatal oedema and noisy breathing due to mechanical causes in the throat will often be diagnosed as laryngeal obstruction, but the chief mistakes from the academic point of view arise in the confusion between the various forms of catarrhal laryngitis, the laryngitis present at the onset of an attack of measles, bronchopneumonia, and retropharyngeal abscess. Other occasional difficulties arise, and I have notes of odd cases of papilloma of the larynx, congenital laryngeal stridor, and whooping-cough.

Catarrhal laryngitis, or spasmodic croup, accounts for 55% of the total number of errors, and this is quite feasible when one thinks of the alarming picture presented by a child with this complaint. The chief clinical contrasts between this and laryngeal diphtheria are:

1. Its sudden onset, very often at night, in an otherwise healthy child, whose only previous history may have been that of a slight upper respiratory catarrh.

2. The attack reaches the acme of severity almost at once and the child is fairly well between each spasm. Often this type of patient is quite well by the morning.

3. The laryngeal involvement is never progressive, although occasionally it may last some days.

Compare this picture with that of a true diphtheritic laryngitis, which is insidious in its onset. Perhaps there may be a history of sore throat, in which case the presence of exudate on the tonsils will make the diagnosis easy. Often, however, the parents may have been unaware of the true state of affairs, and only when the child loses its voice, breathes noisily, or has fits of dyspnoea are their fears aroused. A large number of these cases have clean throats when examined, as the membrane has separated from this situation by the time the larynx is involved. As the attack has probably been severe and of the nasopharyngeal variety, much useful information may be gained by looking carefully at the throat for evidence of slight super-

ficial ulceration, suggesting recently separated membrane, and also the nose for evidence of nasal discharge or actual membrane, which often persists after the throat is clean. In addition, late cases also have a greyish pallor and may still show signs of subsiding cervical adenitis. The characteristic feature of all diphtheritic laryngitis is progression in the absence of treatment. Sometimes it is slow, sometimes rapid, but most cases will terminate fatally unless the true nature is recognized. Unlike other forms of laryngitis, where a child may be almost normal between attacks, in diphtheria the stridor and recession get steadily worse, restlessness increases, and the attacks of dyspnoea are more frequent. Primary laryngeal diphtheria is less common, but accounts for some 20% of those requiring tracheotomy.

Measles.—The next most frequent disease (17%) sent into hospital as laryngeal diphtheria is measles. Not uncommonly, before the appearance of the rash the child may show all the signs of impending laryngeal obstruction, and unless Koplik's spots are identified the diagnosis will be in doubt. As a rough guide, laryngeal symptoms occurring before the rash are due to measles. Laryngeal symptoms appearing after the rash are probably diphtheritic. Laryngeal involvement with the rash may be either, for diphtheria is more often associated with measles than with any other infectious disease, with the exception perhaps of scarlet fever. The presence of laryngeal obstruction associated with measles, whether due to diphtheria or not, formerly had some prognostic significance, for if tracheotomy was found necessary the outcome was nearly always fatal, but I have recently recorded four successful cases whose recovery was probably due to sulphapyridine.

Retropharyngeal abscess should never be confused with true laryngeal diphtheria. The peculiar quacking cry, the noisy breathing, and the presence of a fluctuating swelling on the posterior pharyngeal wall, which can be seen and felt, and of enlarged glands, usually on one side of the neck, all point to the correct diagnosis. Pneumonia, bronchitis, and whooping-cough are all misdiagnoses which can be avoided by careful assessment of the patient's history, signs, and symptoms.

In all these conditions diagnosis on clinical grounds is important, and the laboratory should be used for confirmatory evidence only after the necessary and immediate specific treatment has been given.

Considerable assistance in the elucidation of a doubtful case may be obtained from a knowledge of the patient's immunity in response to a Schick test and the typing of the organism. If the case is obviously doubtful, and there is no immediate danger in withholding serum for a few hours, the patient should be Schick-tested and swabs taken from the nose and throat. Serum may then be given in 7 to 8 hours without upsetting the result of the Schick test. The following results may occur, bearing in mind that all intermedius and gravis strains of diphtheria bacilli are virulent and that mitis strains may be either virulent or non-virulent.

Schick positive; swab positive	Diphtheria
Schick positive; swab negative	Susceptible, but probably not diphtheria
Schick negative; swab positive	Immune; ? carrier
Schick negative; swab negative	Not diphtheria

All swabs should be repeated as a confirmatory measure. In any suspicious case, particularly in private practice, serum should be given first and confirmatory swabs taken subsequently. The technique just described is more suited to a hospital, where a close watch can be kept for possible extension of the disease and suitable treatment undertaken immediately.

Scarlet Fever

There is some doubt whether scarlet fever should be regarded as a distinct disease or merely as one variety of the response of the individual to the toxin of a particular strain of haemolytic streptococcus; but, nevertheless, it is a notifiable disease which is usually segregated, and it is therefore necessary to arrive at a clinical diagnosis without considering too critically its exact mechanism.

Out of over 2,000 cases the diagnostic error is some 8%, composed of the following: toxic erythema (26% of errors), tonsillitis (20%), rubella (18%), measles (12%), diphtheria (6%). The remaining diseases involved are scabies, urticaria, chicken-pox, impetigo, industrial dermatitis, and glandular fever. Perhaps the commonest sources of error are: (1) Taking one manifestation only of the disease, such as the rash, and diagnosing on this alone: scarlet fever is the sum-total of a number of signs and symptoms. (2) Paying too little regard to the history. (3) Omitting to look at the patient's skin, or arriving at an erroneous conclusion after inspection.

Toxic Erythema.—Thus the presence of a scarlatiniform rash does not of itself mean that the patient is suffering from scarlet fever. I have grouped all these cases under the rather loose heading of "toxic erythema," and this comprises rashes attributable to drugs, chiefly atropine, enemata, rubbing-oils, food-poisoning, wearing of rough clothing or blankets next the skin, fits of crying in children (a fruitful source of "rash" after throat examination), and a host of others for which no adequate cause could be found. In almost all the rash dominated the picture, and the other symptoms, such as vomiting and sore throat, were absent. Many of these patients subsequently desquamated, but the desquamation was unlike the pin-hole variety found in scarlet fever.

Tonsillitis accounted for the next 20% of the mistakes, and some of these were missed because no careful examination of the patient's skin had been made, the diagnosis being based on the appearance of the throat and tongue; and some because a transient rash, not an uncommon event even in tonsillitis, had appeared and a wrong conclusion had been deduced. The rashes seen in tonsillitis are erythematous—not punctate—patchy in distribution, and of short duration.

Rubella.—Problems of real difficulty may, however, arise in distinguishing a second-day rubella from a mild scarlet fever, and I have come to the conclusion that it is well-nigh impossible in certain cases. Some 18% of the errors occurred in the differential diagnosis of these two diseases, and there were some doubtful cases which have not been included. I noticed, particularly in the last epidemic of rubella, that a number of undoubted cases had considerable faucial congestion, and when on the second day the rash had disappeared from the face, leaving a scarlatiniform erythema on the rest of the body, it was very difficult sometimes to make the necessary distinction. In addition to the usual distinguishing features of German measles—namely, mild generalized adenopathy, various muscular pains, catarrhal symptoms, and pyrexia—there is one physical sign which is very constant in patients with clean mouths, and this is a marginal gingivitis. On inspection of the mouth the gums are found to be red, swollen, "heaped up," and overlapping the teeth, particularly between the upper centrals and laterals. This sign in conjunction with the other well-known manifestations of the disease will often be found most helpful.

Measles and Varicella.—The two diseases which so often simulate scarlet fever and which account for another 14% of the pitfalls are measles and chicken-pox. Measles is nearly always confused with scarlet fever in the prodromal stages of the disease, one or two days before the true rash appears, when the body may be covered with an eruption indistinguishable from scarlet fever, and the throat and tongue may well be passable imitations of the latter disease. A close inspection of the buccal mucosa will reveal Koplik's spots and quarantine of the scarlet fever ward be avoided! The same remarks apply to chicken-pox, in which a scarlatiniform rash may appear before the true rash. An inspection of the palate will usually reveal one or two early vesicles, giving the key to the situation. To add to the difficulties here, it is not infrequent for scarlet fever and chicken-pox to occur at the same time; but true scarlet fever usually appears after the chicken-pox is fully developed and shows the signs appropriate to that disease.

I have no space to deal with the less important diseases sent into hospital as scarlet fever, such as urticaria, scabies, and impetigo, and their differentiation is obvious enough. Clinical diagnosis is still the best means of recognizing scarlet fever. The Dick and Schultz-Charlton tests and results of throat swabs are often misleading and inconclusive, and I rarely employ them now. A helpful sign in scarlet fever which aided in making a retrospective diagnosis in a doubtful case was the

appearance in due course of pin-hole desquamation; but it is well to remember that if scarlet fever antitoxin has been given early in the disease, subsequent desquamation often fails to appear.

Typhoid Fever

Typhoid fever is a disease of such protean manifestations that it is hardly surprising to find a total error of 37% in the 63 cases notified. I have not included as an error those cases which were sent in as typhoid and subsequently turned out to be other diseases of the enteric group, as clinical diagnosis is well-nigh impossible except perhaps in large-scale epidemics. The chief difficulties seem to arise with (1) various chest diseases; (2) other intestinal diseases; and each of these groups accounts for some 30% of the total faulty diagnosis. The remainder are found in such other cases as tuberculous peritonitis, acute miliary tuberculosis, pectoral abscess, pityriasis rosea, malignant endocarditis, and infective hepatitis. One other interesting alternative occurred recently, and this merits further description owing to its general medical interest.

Four cases of lobar pneumonia, one of bronchopneumonia, and one of empyema were noted; none of these were very obscure in their signs and symptoms, and would most certainly have been excluded had a careful examination of the chest been made. As a rule, pneumonia as a complication occurs late in the disease, and the signs in the chest, coupled with the cough, dyspnoea, and pain in the side, are all against the diagnosis of typhoid fever except in the rare form of pneumotyphoid in which the disease has all the symptoms and signs of lobar pneumonia at the outset. In this connexion it is perhaps worth while noting that herpes of the lips is very unusual in enteric fever. In fact, a critical examination of the patient's chest and a blood smear showing leucopenia and absence of eosinophils would automatically rule out pneumonia and many other conditions superficially like typhoid fever.

Generalized miliary tuberculosis may cause real difficulty, but the early loss of weight, rapid pulse, and possible leucocytosis may help to distinguish it. Jaundice is so rare in typhoid fever that its mere presence is sufficient to exclude the disease, and the only case in this series showing jaundice proved to be infective in origin. With regard to intestinal diseases the simple enteritis lacks the quiet and insidious onset of enteric. The sudden vomiting, griping abdominal pain, diarrhoea, and tenesmus are all unlike the vague feeling of real illness which ushers in the onset of typhoid fever. Malignant endocarditis may simulate typhoid very closely: the high temperature, enlarged spleen, perhaps abdominal distension, all combine to make an exact assessment difficult. A search for a possible cardiac lesion, haematuria, and petechiae in the skin will help in excluding the former disease.

One case of special interest occurred quite recently at the hospital. A man 32 years of age, a baker by trade, was admitted with a diagnosis of typhoid fever. He had been ill at home for two weeks with severe headaches, insomnia, pains in his limbs, a high temperature, and gastro-intestinal upset, vomiting, and loose stools. On admission his temperature was 104°, pulse 132, respirations 36; and the only physical signs I could find were a slight icteric tinge in the conjunctiva, diminished air entry at the left base with a few post-tussive rales, an enlarged thyroid, and muscular pains and tenderness in the upper arms and calves of his legs. A white count revealed a leucocytosis of 20,000—polymorphs 62%, lymphocytes 18%, eosinophils 17%, and monocytes 3%. In view of his high eosinophil count I made careful inquiries as to his occupation and habits of life. It turned out that he was a pork-pie baker and that every day he ate a few ounces of raw pork to see if it was sufficiently seasoned before putting it in the pies. Suspicion was at once aroused as to the possibility of trichiniasis, and his subsequent signs and symptoms were very typical of the disease. The calf muscles became swollen and tender, his tongue was enlarged to such an extent that he could hardly protrude it, and the swelling of his thyroid remained. The muscles of both upper extremities were soon involved, and he was very ill. At no time was there any facial oedema. Gradually the high fever settled, the muscular tenderness and swelling abated, and his thyroid returned to normal size. At this stage I removed a piece of his left deltoid muscle, and on examination this was found to contain *Trichina spiralis*. He was eventually discharged quite fit and well. I mention this case in greater detail as a very uncommon possibility when confronted with a case of "P.U.O.," and also to draw attention to the fact that a man's occupation often involves processes not imagined by the interrogator.

Perhaps the most helpful points in considering a doubtful case of typhoid fever and before sending specimens to the laboratory are as follows:

1. Gradual onset with headache and malaise.
2. A relatively slow, perhaps dicrotic, pulse with a rising temperature.
3. Constipation or diarrhoea.
4. Low blood pressure.
5. Abdominal distension, with palpable spleen.
6. Bronchitis and epistaxis.
7. The state of the tongue and throat; the latter may be congested.
8. The rash when present, bearing in mind that it may be sparse and require a careful search.
9. Absence of abdominal reflexes.

Dr. J. D. Rolleston drew attention to this last sign many years ago, and, provided that other nervous diseases are excluded, I have found it to exist in a large number of proved cases.

Naturally, most cases will have to be confirmed either by blood culture or by agglutination tests, and newer technique in these laboratory methods enables differentiation to be made between an active infection occurring in an inoculated person and even the carrier state.

Acute Anterior Poliomyelitis

Acute anterior poliomyelitis appears to be an even more baffling disease from the diagnostic point of view, for out of a total of 30 notified cases there is an error of just over 50%, and these include a list of nervous diseases which would do credit to Queen Square Hospital, mechanical faults which could be seen in the out-patient department of any general hospital, and the usual makeweights which had apparently no connexion whatever with the disease. These nervous diseases were: cerebellar tumour, cerebral tumour, disseminated sclerosis, traumatic neuritis (drunkard's palsy), a transverse lesion of the spinal cord, a hemichorea, and a post-diphtheritic palsy, easily demonstrated by immobility of the palate, nasal voice, and regurgitation of fluids through the nose.

I feel quite incompetent to discuss differential diagnosis in nervous diseases, so will pass straight to the mechanical factors influencing locomotion which were sent in under this heading.

One boy, unable to walk, was found to be suffering from a septic sore on the heel, another from inguinal adenitis secondary to a sore on the foot, and yet another from a tuberculous hip; finally, we had a man with lumbago. A few cases of scarlet fever and influenza, and a pneumococcal meningitis, complete the list.

Perhaps a very brief summary of the features of the spinal type of the disease may help to distinguish it from some of the above-named conditions.

The pre-paralytic stage is associated with sudden onset, catarrhal symptoms such as coryza and sore throat, vomiting, pyrexia, and malaise—in fact, much like the onset of any acute infection. During this stage two signs are useful: the spinal sign, in which there is resistance to passive anterior flexion of the neck, and Amoss's sign, which is useful for older children. If the patient is sat up in bed and asked to fold the arms, he may attempt so to do, but quickly places his arms behind, so that the body weight is borne on a tripod, consisting of his arms, with the spine as the "third leg."

If these signs and symptoms are present it is quite justifiable to send the case into hospital with a provisional diagnosis of infantile paralysis. Often, however, it is impossible to recognize the disease in the pre-paralytic stage with any degree of certainty, although its presence in the district will often arouse suspicion at these rather suggestive symptoms. This stage may be succeeded by an evanescent meningeal stage in which headache, drowsiness, and irritability are prominent symptoms, or may proceed to the paralytic stage straight away. It is often possible to overlook this if too much attention is paid to the constitutional signs and symptoms. I have seen this happen in hospital, and only a few weeks ago I missed a case which I was looking after personally.

Before the actual paralysis occurs there is much muscle tenderness, hyperaesthesia, and stiffness of the neck and spine, so that the patient greatly resents interference by the examiner. Rarely, all these prodromal signs and symptoms may be wanting, and the sudden onset of paralysis may be the first signs of illness. I have observed such a case in this hospital.

When the paralysis occurs it is usually maximal at the beginning, but I have notes of one case in which there was a four-day interval

between paralysis of the right shoulder-girdle and of the left leg, the latter occurring after the temperature had returned to normal—rather an unusual occurrence. The tendon reflexes are usually absent or greatly diminished in this phase and the paralysis is flaccid.

Many varieties of history, signs, and symptoms are seen in different individuals, and the encephalitic form may justifiably be regarded as a tuberculous or other type of meningitis, unless facilities exist for examination of the cerebrospinal fluid.

Cerebrospinal Fever

During the war most practitioners have had a fairly large experience of cerebrospinal fever, but nevertheless it is interesting to consider the diseases which at first sight were thought to be meningococcal meningitis. Some of these were indistinguishable from cerebrospinal fever on clinical grounds alone, and out of 140 cases notified there was an 18% error, much reduced if other types of meningitis are excluded. Sixteen such cases occurred—9 tuberculous meningitis, 4 benign lymphocytic meningitis, 1 pneumococcal, 1 streptococcal, and 1 syphilitic meningitis. Again some confusion has arisen in various chest conditions, mostly in children, presenting signs of meningism: two cases of lobar pneumonia, one of bronchopneumonia, and one of spontaneous pneumothorax were wrongly thought to be cerebrospinal fever, although the last-mentioned case presented very few signs or symptoms referable to meningitis. Among the miscellaneous conditions seen were transverse myelitis, aneurysm of the middle cerebral artery, and one case each of measles, rubella, and scarlet fever.

It is impossible to differentiate with certainty the various forms of meningitis clinically before submitting a specimen of the cerebrospinal fluid to the laboratory, but in all the cases which subsequently turned out to be of tuberculous origin there was a history of gradual onset, a vague prodromal period of ill-health, or a history of some chest trouble which gave a pointer to the possible origin of the trouble.

Pneumonia in children may simulate meningitis very closely. The sudden onset, the signs of meningeal irritation, the high temperature, and perhaps paucity of physical signs in the chest are all misleading.

The measles and scarlet fever cases were probably sent in through the mistaken view that the rash was that of meningococcal meningitis, but there were no other signs to suggest a meningeal lesion. The patient with rubella was sent in because she complained of a stiff neck. This particular symptom sometimes occurs several days before the rash appears, and may well give rise to some doubts when cases of the more serious disease are prevalent.

Miscellaneous

I have mentioned the commoner infectious diseases; there are others, and combinations of the various infections, which I could include, such as bronchitis, frequently sent in as whooping-cough, erysipelas, which has been confused with eczema, carbuncle, dacryocystitis, herpes zoster, and cavernous sinus thrombosis; but of all the mixture of odd infections the most frequent mistake is the case labelled "measles and bronchopneumonia." Perhaps, however, this mistake may be a matter of expediency rather than a lack of clinical acumen. Ordinarily, cases of uncomplicated measles are not admitted; but attach the magic word "bronchopneumonia" and a bed is found somewhere!

In spite of this there are a great number of honest errors of judgment, and I think the reason is probably that the doctor is called in either just as the rash is appearing or when it is just fully developed, so that the child is restless and looks ill. At this stage the fever is considerable—the temperature commonly elevated to 103–104°, there is considerable catarrh in the chest, the respirations are frequent and short, and there is nearly always a dry cough. The physical signs in the chest at this stage are those of a mild bronchitis, but the whole picture looks at first sight rather like a bronchopneumonia. Very soon, within 24 to 36 hours, the rash begins to fade, the symptoms abate, and the temperature drops, and it is during the next few days that true bronchopneumonia is likely to develop. It is only exceptionally that pneumonia occurs in the prodromal stage or coincidently at the time of eruption.

I have tried, so far as is possible, to avoid figures in this paper, nor do I wish to imply any criticism of other doctors' work. I am sure there would be ample material for another paper based on my own personal mistakes. Anyhow, it will show that life in a fever hospital is not so dull, that it does not consist entirely in looking after cases of scarlet fever, and that good clinical work can still be found in this branch of medicine—despite the war and the forms!

I have to thank Dr. T. Peirson, medical officer of health, City of Plymouth, for permission to publish this paper. I should also like to acknowledge the help I have obtained from the standard works on infectious disease for reference on doubtful points, particularly *Harries and Mitman* and my old chief's book, *Rolleston and Ronaldson*. Few who have worked under Dr. J. D. Rolleston could fail to be stimulated by his magnificent teaching on the infectious fevers.

GASTRO-INTESTINAL BLEEDING DUE TO VITAMIN K DEFICIENCY COMPLICATING LABOUR

BY

EILEEN MALONE, L.R.C.S., L.R.C.P.I., L.M.

In 1929–33 a haemorrhagic chick disease was observed in a number of laboratories (Brinkhous, 1940), in most cases incidental to experiments in which chicks were fed purified diets low in fats. During observations on the effect of various proteins on the growth of chicks spontaneous haemorrhages were noticed. Administration of lemon juice, ascorbic acid, cod-liver oil, and wheat-germ oil failed to prevent these haemorrhages in chicks fed on the purified diets. It was suggested by Dam, in 1934, that this condition constituted a new dietary deficiency disease, and his suggestion that the deficient factor be called vitamin K has been adopted. These diets were low in fats, and McFarlane, Lane, and Richardson gave evidence of the fat-soluble nature of the vitamin: they noted that fish meal prevented haemorrhage unless it had been extracted by ether.

Haemorrhagic chick disease was recognized as being due to deficiency, and the relationship of this dietary factor to blood clotting was established. A low plasma prothrombin was suspected: a haemorrhagic tendency appeared when the low prothrombin levels were reached when feeding chicks on K-deficient diets for several days. Both the low prothrombin and the haemorrhagic tendency were cured by feeding vitamin K.

That mammals may develop such a deficiency was shown in conditions in which the absorption of this fat-soluble vitamin is hindered by absence of bile in the intestine. Hypothrombinaemia and haemorrhage ensued, and were cured by the administration of vitamin K. Vitamin K occurs richly in alfalfa, spinach, cabbage, cauliflower, carrot-tops, and soya beans; it is less potent in tomatoes and orange peel. There is a little in liver and egg yolk.

The causes of vitamin K deficiency are deficient diet, obstructive jaundice, and biliary fistula leading to absence of bile in the intestine. Haemorrhagic disease of the newborn shows a low prothrombin level and is controlled by vitamin K. Jaundice appears to have no relation to the deficiency. Haemorrhage due to low plasma prothrombin may occur in ulcerative colitis, intestinal obstruction, and fistulae.

Attention is directed to a most complete and excellent review of the literature on plasma prothrombin and its relationship to vitamin K by Brinkhous (1940).

In view of the above facts it may be interesting to record a recent case of mine treated with vitamin K.

Case Report

A farmer's wife was taken ill in Sept., 1943, with acute pain in the back and vomiting. Her temperature varied from 100° to 103° for four days. She was diffusely tender over the abdomen, but no definite localizing signs were obtainable. Her condition becoming worse on the evening of the fourth day, I sent her into hospital, twelve miles distant. The urine showed no abnormalities up to that time. In hospital her case was diagnosed as a simple catarrhal jaundice, and bile appeared in the urine. A blood count revealed

2,500 white cells, but otherwise was normal. Her last menstrual period was Aug. 18, and she thought she was pregnant; her only child was then 6 years old. She returned home in eleven days; she looked ill and vomited more or less severely for about ten weeks. The Aschheim-Zondek test was positive. During this time she had a slight discharge of blood from the vagina, and was given wheat-germ oil. A polypus was found on examination; this was removed in December. All through her pregnancy she continued to have a tendency to vomit occasionally. At the start of her illness she took nothing but glucose and water, and after one week honey, tea with sugar and skimmed milk, and a little bread. On her return home her diet consisted of carbohydrates in the form of glucose, bread, jelly, and marmalade, and proteins in the form of meat and chicken. She also ate baked apples and vegetables, but no butter or eggs. Gradually butter and full-cream milk were introduced, and lastly eggs in four weeks' time. By the sixth week she was on normal diet. She spent the last three weeks of her pregnancy in bed because of lassitude and severe cramping pains in both groins and in the rectum. The spleen was never palpable. The patient's husband developed jaundice one month after her return from the hospital, and her sister and niece two and three months later, respectively.

At term on May 18, 1944, at 10 a.m., after a slow labour, she was delivered spontaneously of a normal live male infant (10 lb. 14 oz.). Placenta and membranes, intact, were expressed half an hour later. An old perineal scar reopened, and was repaired under local analgesia (two internal and three external sutures). At 10.45 a.m. she bled freely per rectum. Pituitrin 1 c.cm., morphine gr. 1/4, and routine treatment for shock followed hot vaginal and rectal lavage. There was no rectal tear. Pituitrin was repeated during the afternoon. Plain and glucose water were given freely by mouth. At 3.50 p.m. she vomited first clear then blood-stained fluid (approximately 60 c.cm.). Her general condition was improving. Morphine was repeated at 5 p.m. and vitamin K 10 mg. (prokayvit B.D.H.) was administered intramuscularly into the buttock. The patient bled no more, and made a good recovery. The next day prokayvit 5 mg. was injected intramuscularly. Rectal saline was given; this returned blood-stained and was not repeated. She was put on liquid paraffin t.i.d. On the sixth day after delivery she passed a melaena, after that normal stools. On June 2 a pathologist reported as follows:

Pathological Report 1.—Blood count: Hb, 59%; R.B.C., 3,310,000 per c.mm.; platelets, 236,000 per c.mm.; colour index, 0.89; leucocytes, 3,800 per c.mm.—polymorphs 74%, lymphocytes 26%. Fair numbers of reticulocytes present. The red cells show slight anisocytosis. Blood urea, 25 mg. per 100 c.cm. Blood fragility: Haemolysis starts in 0.36% and is complete in 0.30% saline. There is no increase in the fragility of the red cells. Urine: S.G., 1010; *p*H, 6.8; no albumin, no sugar; urea, 0.82%; fair numbers of red cells, a few pus cells, no casts seen. Fair numbers of coliform bacilli seen in fresh smears. Culture: A very large growth of coliform bacilli obtained. Van den Bergh reaction: Completely negative, both direct and indirect. Blood bicarbonate: 64.3 c.cm. CO_2 bound by 100 c.cm. plasma at N.T.P. Prothrombin clotting time: 39 secs. (control, 25 secs.); definitely prolonged.

On June 5 the patient was given 5 mg. of prokayvit intramuscularly, which was repeated on June 6, when she left our infirmary. She visited the laboratory on June 7, and the following report was issued:

Pathological Report 2.—Blood count: Hb, 70%, R.B.C., 3,836,000 per c.mm.; colour index, 0.92; leucocytes, 6,250 per c.mm.—polymorphs, 69%, lymphocytes 27%, monocytes 1%, eosinophils 3%. An occasional reticulocyte present. No abnormal white cells seen. Platelets abundant. Prothrombin index: June 5, 67%; June 8, 111%.

It should be noted that the patient received the first vitamin K injection on May 18, the second injection on May 19. On June 2 the first prothrombin index was determined, and was found to be 67% of normal (100% = 25 secs.). On June 5 the third vitamin K injection was given, and this was repeated on June 6; on June 8 the second prothrombin index was determined, and was found to be 111%. The first and second administrations of vitamin K were therapeutic, the third and fourth experimental, to detect a rise in the prothrombin index.

A hippuric acid excretion test has since been made, with the following results. No other liver function tests were available.

Time	Urine Collected	Specific Gravity	Hippuric Acid Excreted
9.30 a.m. ..	200 c.cm.	1006	0·25 g. }
10.30 a.m. ..	173 c.cm.	1012	0·05 g. } 0.45 g.
11.30 a.m. ..	153 c.cm.	1011	0·07 g. }
12.30 p.m. ..	102 c.cm.	1010	0·08 g. }

In a follow-up pathological examination, dated Sept. 7, the prothrombin index was found to be 85% of normal; the total hippuric acid 6.26 g. (normal about 5 g.).

The amount of hippuric acid excreted by normal individuals is approximately ten times the amount recovered from this patient. The hippuric acid test suggested that some degree of liver damage was present, although, clinically, there were no objective signs to indicate liver dysfunction. As Andrus and Lord (1942) have shown, patients with parenchymal liver damage of severe degree do not respond to vitamin K, and hypoprothrombinaemia persists in such subjects. Sweet, Lucia, and Aggeler (1942) showed that the hippuric acid test is a more delicate index of liver function than prothrombin concentration, although the latter detects destruction of liver parenchyma as well.

Commentary

It is probable that the bleeding manifested by this patient was due to vitamin K dietetic deficiency in the first two months of gestation, inasmuch as she subsisted on a fat-free diet during most of that time and only gradually resumed ingestion of fats during a rather prolonged convalescent period.

That the haemorrhagic tendency resulted from vitamin K deficiency is supported by the marked rise in prothrombin index from 67% to 111% after the second two injections of the vitamin; in addition, the clinical recovery of the patient after the initial administration of the vitamin corroborates most substantially this point of view.

A lapse of 15 days took place between the therapeutic and the experimental administration of vitamin K, and the prothrombin index at the onset of labour might have been very much lower than when first estimated. The results of the hippuric acid excretion test indicate impairment of liver function, although to establish this beyond doubt would require further laboratory studies, which, unfortunately, could not be carried out because of the lack of such facilities, and because of the difficulty of transporting a non-ambulant patient for such studies. That the prothrombin level rose so much after the experimental administration of vitamin K indicated very strongly a pre-existing deficiency in that factor. Another factor to be considered is the hydraemia of pregnancy, which, by its occurrence as a physiological concomitant feature, may reduce a borderline prothrombin content to a lowered one, particularly if the diet, as in this case, be deficient in vitamin K. In such a patient post-partum haemorrhage from the placental site would prove an even more serious complication of labour, particularly if the possibility of a vitamin K deficiency either was unknown because of an inadequate neonatal history or was overlooked.

Summary and Conclusions

The case history of a patient developing gastro-intestinal bleeding during the last stage of labour and early puerperium is recorded, with evidence supporting the view that the haemorrhagic tendency resulted from a lowered blood prothrombin level; clinical recovery followed the administration of vitamin K.

Pregnant women who have suffered from an obstructive jaundice and consequent dietary deficiency in fats would benefit by having a prothrombin index taken before the onset of labour, so that vitamin K administration may be instituted, if necessary, to prevent a haemorrhagic tendency from developing as a result of hypoprothrombinaemia.

My grateful thanks are due to Dr. Mackarell, pathologist of Leicester Royal Infirmary, for his reports and advice, and to Sister Robinson for her unremitting watchfulness and care of the patient.

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Wartime restrictions prevent even so deserving a cause as the Grenfell Association from notifying the public of the Christmas cards and purse calendar which are being sold again in aid of the association's work in hospitals, nursing stations, schools, etc., along the 1,000-mile coast-line of Labrador. Readers are therefore asked to make a special note that in the cards four designs are available, price 6d. each with envelope, postage extra; from the offices of the association at 66, Victoria Street, London, S.W.1. The price of the purse calendar is 3d., postage extra. These represent as good value as is to be obtained, quite apart from the help which their sale means to the Grenfell Mission.

SPONTANEOUS RUPTURE OF AN APPARENTLY NORMAL SPLEEN

BY

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Spontaneous rupture of an apparently normal spleen is rare enough to warrant publication. Susman (1927) had a case in a man aged 53 and reviewed the literature of 8 previously reported cases. His patient had had indigestion and flatulence for three months, and indigestion had been a feature of four out of the six cases he reviewed. He suggested that in the spleen there was a localized lesion which was itself destroyed by the bleeding and which was the cause of the dyspeptic symptoms. He stressed a relationship between splenic and gastric activity.

Later Hamilton Bailey (1930) reported a further case of spontaneous rupture in a man aged 20: the spleen was normal on macroscopic and microscopical examination. He reviewed the cases reported by Susman and found a further two in the literature, bringing the total to 12. Hamilton Bailey felt that "forgotten trauma should be accepted as the cause. If that theory is discarded we are plunged into a morass of speculation in which it is unprofitable to linger."

Black (1933) reported a case in a woman aged 52. The sudden onset of severe abdominal pain was preceded by some weeks' uneasy feeling under the heart. She was found to have an intraperitoneal haemorrhage from a ruptured spleen. The spleen was normal in size, and microscopy showed hyalinization of the wall of the central artery. Black said that the spleen aged early, that at 36 years 50% of spleens show hyaline vascular change. He believed this change rendered it liable to haemorrhage and that torsion of the pedicle was the immediate cause in his case.

Zuckerman and Jacobi (1937) added a further case, in a woman aged 39. They reviewed the preceding cases and found further records in the literature, bringing the total reported to 22. In their patient the spleen was abnormally mobile owing to the absence of the lieno-phrenic ligament. Similar findings were present in the case reported by Halliwell (1933). Zuckerman and Jacobi pointed out that the condition is apparently uninfluenced by sex or age. Two of their cases occurred under the age of 20, and those remaining were more or less evenly distributed in each decade from 20 to 60. This age distribution, they felt, was strong evidence against vascular degeneration being the causative factor. They suggested that the common factor was venous congestion due to kinking of an unusually mobile splenic pedicle. This was due to a development defect in the peritoneal relations of the spleen resulting in the absence of the lieno-phrenic ligament.

Coleman (1939) had a further case. His patient was a man aged 58 with a long history of previous indigestion. The spleen was normal in size. The histological report stated that there was well-marked arteriolar sclerosis, and the haemorrhage may have been due to rupture of one of the damaged vessels. Coleman suggested that disturbance of gastric function caused congestion of the portal vein and its radicles and led to rupture of a damaged vessel.

Dubash and Langley (1944) reported spontaneous rupture of the spleen occurring in a patient in bed suffering from an acute axillary lymphadenitis. Although this spleen showed an acute inflammatory reaction and cannot be considered normal, it is of interest to note that it was abnormally mobile.

Case Report

A soldier aged 36 was admitted to an Emergency Hospital at 7 a.m. on Sept. 18, 1943. His leave had started on the 17th, and he spent his day travelling. He left his unit at 7 a.m. and reached his home at 1 p.m. He had no food on the journey, but had a midday meal on arrival home. He then had a light tea, followed later by supper. At the last meal he had celery. He went to bed at 10 p.m. feeling perfectly well, but within a few minutes he had abdominal pain, which became very severe, reaching its maximum intensity within two minutes. The pain was on the left side of the abdomen between the lower ribs and thigh, being described as a burning sensation running from above downwards and continuing without remission. He felt sick, and vomited once immediately after the pain started. His bowels were regular. He had never had indigestion. Micturition was normal.

On examination the patient was half sitting and half lying, curled up on his left side. Any movement from this position was resented. His general condition and colour were good. The temperature was 98.4° and the pulse 70. The abdomen was tender and rigid, especially in the left upper quadrant. The percussion note was normal. No peristalsis was audible.

A diagnosis of perforated gastric ulcer was made and a laparotomy undertaken. As the pain was most severe on the left side a midline incision was used to open the abdomen. On entering the peritoneal cavity large quantities of blood escaped. The bleeding was found to be coming from the spleen, and after extending the incision laterally to the left costal margin a splenectomy was carried out. Clots and the bulk of the fluid blood were removed; the other abdominal viscera were normal, and the incision was closed. The patient's post-operative condition was good and no transfusion was necessary. His progress was uneventful until the third week. He then had some pain and tenderness in the left hypochondrium accompanied by slight fever, the temperature rising to 99°. This was possibly due to injury to the tail of the pancreas; the condition subsided in about ten days.

On Sept. 27 the blood count was: R.B.C., 3,330,000; Hb, 60%; colour index, 1.03; W.B.C., 10,400—polymorphs 70%, lymphocytes 26%, large mononuclears 1%, transitionals 0%, eosinophils 2%, basophils 1%. The anaemia was believed to be due to blood loss, so the patient was given iron by mouth. On Oct. 11 his red cell count had risen: R.B.C., 4,320,000; Hb, 74%; colour index, 0.89; W.B.C., 7,600. No malaria parasites were seen in thick films. Blood pressure, 138/74.

After operation the patient was closely questioned to find out whether the rupture could be accounted for by injury. Three months previously he had fallen against a tap and struck his right side. His lower ribs had been painful for a month, but the pain was never bad enough to make him report sick.

The spleen was normal in size and consistency. At the junction of the upper and middle thirds of the cut surface the pulp showed six or seven small haemorrhages about the size of a pea. One of these areas on the convex surface communicated with an extensive subcapsular haematoma. The capsule had a large rent through which the blood reached the peritoneal cavity.

Dr. J. L. Edwards, who examined the spleen, reported on its histology:—"The Malpighian bodies are well defined. The central arteries are hyaline. There has been recent haemorrhage into the pulp. There is a reticular increase in the pulp. No malaria parasites are seen in Giemsa preparation. Eosinophil leucocytes are fairly numerous in the pulp."

Discussion

In the light of previous reported cases the main points of interest of this case are: (1) the naked-eye appearance of the haemorrhage in the spleen; (2) the history of previous trauma; (3) the absence of previous dyspepsia; (4) the presence of degenerative changes in the blood vessels of the spleen; (5) the spleen was not abnormally mobile.

It is suggested that the appearance of multiple haemorrhages was misleading and that there was one haemorrhage burrowing in the splenic substance, stripping the capsule and bursting into the peritoneum. The appearance of multiplicity was due to cutting the tortuous haematoma in several places. The only previous trauma to the lower chest and abdomen occurred three months earlier. The pain was confined to the right side of the lower chest and did not stop the patient from working. On subsequent examination the spleen failed to show either adhesions or evidence of old haemorrhage.

Although this patient had had no previous indigestion he had been travelling most of the day and had eaten mainly vegetables. He himself attributed his misfortune to eating celery. At laparotomy stomach, duodenum, and gall-bladder were found to be normal.

The blood vessels of this spleen showed well-marked hyaline change. It is probable that the underlying cause in all cases of spontaneous rupture of the apparently normal spleen is an intrasplenic haemorrhage. This may be a ruptured vein or splenic sinus following congestion. In many cases congestion has been noted. The cause of the congestion probably varies. Different causes have been cited—viz., partial torsion or kinking of an unusually mobile pedicle (Zuckerman and Jacobi, 1937; Halliwell, 1933; Black, 1933; Dubash and Langley, 1944), pregnancy (Burnett and McMenemey, 1935),

hepatoma (Dardinski, 1932), or recent thrombosis of a splenic vein (Rhame, 1928).

It is probable that in some cases there is an arteriolar rupture. The splenic artery degenerates early. Black states that at 36 years 50% of spleens show degenerative changes. The splenic artery may show gross degenerative changes with aneurysm formation when the rest of the arteries in the body are normal (Parsons, 1937).

In the case reported above the spleen was not abnormally mobile—there was no evidence of venous obstruction, and in view of the arteriolar degeneration present it is possible that the haemorrhage was arteriolar in origin.

Summary

A further case of spontaneous rupture of an apparently normal spleen is reported and a brief review of the literature is given. It is suggested that rupture is secondary to an intrasplenic haemorrhage. It is unlikely that any one common cause of the haemorrhage will be found to explain all cases.

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PNEUMOPERITONEUM

BY

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The term "pneumoperitoneum" is used to describe the presence of free gas in the peritoneal cavity without evident peritonitis. The condition is regarded as rather a curiosity, but d'Allaines (1932) was able to analyse 34 published cases, and to add one from his own experience. The fact that three cases can be reported here, all of which were observed within the space of a few months, suggests that spontaneous pneumoperitoneum is not really very uncommon, and that to be aware of the existence of the syndrome is to make it likely that one will observe it.

Case I

An unmarried woman aged 30 was admitted to the Royal Northern Infirmary under Dr. T. N. MacGregor for removal of fibroids of the uterus. Her previous health had been good except for dyspepsia for several years. She developed a post-operative collapse of the right lung with secondary infection. This was treated with sulphanilamide, but resulted in a small right-sided pleural transudate (sterile). After this had subsided she complained of a sharp pain in the right side, had a rise of temperature to 101° F., and *x*-ray screening (Dr. G. Gotlieb) showed gas beneath the right diaphragm (which had not been present in previous radiographs). She had some tenderness and some muscle spasm in the upper abdomen, and there was complete disappearance of liver dullness. Her general condition, however, was not that of generalized peritonitis. Further treatment with sulphadiazine was given, and after four days her temperature was normal and symptoms absent, but there was still some abdominal tenderness. This gradually disappeared, and she was discharged from hospital. She was *x*-rayed again three weeks later (Dr. Gotlieb), and gas was still to be seen below both domes of the diaphragm. There was an ill-defined pyloric antrum with some deformity and stiffness, apparently due to adhesions. The duodenal cap was deformed, probably from adhesions to the gall-bladder. No ulcer crater was seen. The emptying time was delayed, with a moderate two-hour residue. The appendix was partially filled, fixed to the midline, and tender on palpation.

This patient reports, 18 months later, that she has since remained in good health.

Case II

A married woman aged 60, with six children, was admitted to the Royal Northern Infirmary for attacks of abdominal pain with nausea and occasional vomiting, constipation, anorexia, loss of weight, and attacks of diarrhoea preceded by severe abdominal pain, the stools being fluid and dark, without excessive mucus. Her general condition was good except for recent loss of weight. Her complexion was sallow. Red cells numbered 4.8 millions, with haemoglobin 89%. The heart action was normal except for extrasystoles. Stomach splash was present three hours after food. The benzidine test was consistently positive in stools. Fractional test meal: Maximum free acid, 0.15%; traces of blood throughout; starch present to the third hour. Radiograph (Dr. Gotlieb): ptosis of the stomach with no clear definition of pylorus or duodenum; a large residue of barium present at four hours; gas seen below both domes of the diaphragm.

At this time there was no tenderness, distension, or rigidity, and little discomfort. She was kept in bed, given a diet largely of milk and regular gastric lavage, and was *x*-rayed again three weeks later, when the appearances were much the same, though an ulcer crater could be seen at the base of the deformed duodenum. A large barium residue was seen at five hours (Dr. Gotlieb). After further gastric lavage the residue steadily diminished and the patient was symptomless. She left hospital to continue under observation as an out-patient.

Over a period of about four months she was seen at intervals of a few weeks, her only symptom being a feeling of abdominal distension "towards the evening, when there was a sensation as of something crackling." She was readmitted, however, four months after her discharge in a coma from alkalosis following several days of repeated vomiting. Tetany was present. Blood urea was 220 mg. and blood calcium 6.8 mg. per 100 c.cm. Intravenous glucose-saline rapidly improved her condition, and she later submitted to gastro-enterostomy (Mr. A. J. Hamilton), from which she made an uninterrupted recovery. Operation showed a narrow scarred pylorus, but no signs of perforation.

Case III

An unmarried woman aged 35 was referred to me in 1941 for abdominal pain of irregular occurrence, but sometimes of the hunger type and relieved by food; the pain had prevented her from working as a cook for 10 months. She had been previously studied without a positive diagnosis being made, at the Glasgow Western Infirmary. Her general condition was good. No physical signs were found. A fractional test meal showed a maximum free acid of 0.11%, with starch present to the third hour. Radiographs (Dr. Campbell Tainsh) showed a normal oesophagus, stomach, and duodenum, with no gastric residue at six hours; the appendix was not outlined. No blood was found in test meal or stools.

A year later she was admitted as an emergency to the Lawson Memorial Hospital, Golspie, under Mr. B. S. Simpson, with abdominal pain and distension of three days' duration. She was in a state of surgical shock. General restorative measures and the passage of a flatus tube improved her condition, but the next day there was increased distension and pain. At operation, as soon as the peritoneum was opened, there was an outrush of non-odorous gas and the abdomen became deflated. No evidence of peritonitis was found, nor could any other lesion be discovered. A caecostomy was carried out. After operation she was in good condition for a few hours, but there was then a recurrence of pain and distension, with deterioration of her general condition, and the abdomen was reopened 48 hours after the first operation. Once again there was an outrush of odourless gas and no evidence of obstruction or peritonitis. The abdomen was closed, and on the following day there was once more an acute recurrence of pain and distension. A needle was inserted in the posterior axillary line beneath the ninth and tenth ribs, and there was a prompt outrush of gas, with complete relief of symptoms.

There was no further recurrence of symptoms. The patient made an uneventful recovery and the caecostomy wound was closed. I saw her at the Lawson Memorial Hospital at this time and could detect no physical signs. She was admitted to the Royal Northern Infirmary two weeks later for further study, and immediately after admission developed a pain beneath the ribs on the left side which was worse on taking a deep breath and prevented her from sleeping. The abdomen was slightly distended and tender on the left side of the epigastrium. These symptoms disappeared after a bowel movement, and subsequently there was no further pain or distension. The patient was afebrile. Radiographs (six weeks after the first symptoms) showed no abnormality in oesophagus, stomach, and duodenum, and no evidence of gas beneath the diaphragm (Dr. Campbell Tainsh).

Comment

It will be noted that these three patients were women, and I have only been able to discover a report of one male case—that of d'Allaines (1932)—and no case in childhood. All the patients described here and a great majority of those reported elsewhere have had previous symptoms referable to the gastro-intestinal tract, usually suggestive of ulceration. The gas in two analyses quoted by d'Allaines (made by Montmollin and Urban) was atmospheric except for a rather higher content

of nitrogen. The symptoms in published cases have been sometimes trivial and sometimes, as in the third case reported here, very severe. None of my patients complained of the pain beneath the left shoulder which is reported by Neumann (1943) as characteristic of artificial pneumoperitoneum (an observation confirmed by personal experience). The normal intra-abdominal pressure as measured by a manometer connected with the peritoneal cavity was −9 cm. of water in the knee-elbow position, but slightly positive in the erect position (Eisenmenger, 1935; quoted by Moberg, 1937). Moberg himself found the intra-abdominal pressure in a rabbit normally negative. My own observations in two cases of artificial pneumoperitoneum gave a normal slightly negative pressure with a very quick rise to positive pressures after introduction of quite small quantities of air at the site of the manometer needle; one could, however, continue to introduce air, without much further rise in pressure and with very little discomfort to the patient, to a total of anything up to one or more litres. No pain except slight discomfort at the shoulder was complained of by these two patients. Coombs (1922) found no immediate alteration of pressure when air or fluid was introduced into the peritoneal cavity.

Almost all the reported cases of spontaneous pneumoperitoneum have been thought to be due to escape of gas from the stomach or the first part of the intestine by a perforation so situated as to allow the escape of gas only, and healing so rapidly as not to be followed by the escape of other duodenal or gastric contents. There are at least two other possible sources of free gas in the peritoneum: (*a*) vaginal, via the Fallopian tubes; and (*b*) thoracic, via the diaphragmatic hiatus. The forcing of air through the Fallopian tubes, presumed due to vaginal douching with careless use of a syringe, has been reported by Moberg (1937), and, by the same author in another case, from supposed alteration in intra-abdominal tension secondary to gastric dilatation. This latter patient, an elderly woman with carcinoma of the pylorus, was in the habit of adopting a stooping position to provoke vomiting, and Moberg considered that she produced an unusually low pressure in the peritoneum with subsequent suction of air through the Fallopian tubes. Dr. T. N. MacGregor informs me that it is unusual to require a pressure exceeding 4 cm. Hg for artificial inflation of the Fallopian tubes, and that he considers spontaneous suction of air through the vagina very unlikely. Only one of my patients (Case III) had been using vaginal douching for leucorrhoea before the occurrence of her symptoms, and the recurrence of distension in her case makes it quite obvious that this could not have been the source of her pneumoperitoneum. It is nevertheless odd that almost all the reported cases should have been in women. An exceedingly rare cause of intraperitoneal gas is so-called "pneumatosis cystoides peritonei," which is due to infection by parasites.

Lastly, at least one case has been recorded (Hinkel, 1940) in which pneumoperitoneum was thought to be the result of an extension of gas from the thorax to the peritoneum by way of the diaphragmatic hiatus. His patient, a woman aged 70, had sudden symptoms of abdominal distension and tenderness, without severe constitutional symptoms and without fever. She was discovered to have an old left basal pleurisy with a high left dome of the diaphragm, and a bronchogram showed, just above the diaphragm and close to the heart shadow, a large emphysematous bulla which was considered to be the probable source of the gas.

The case reported by d'Allaines is the only one I can find in the literature which bears a close resemblance to Case III, reported here as having had severe symptoms without any definite evidence of perforation at operation. d'Allaines suggested that the explanation in his case lay in a perforation of the stomach so minute and so close to the oesophageal opening as to be inaccessible to observation. He recalled one patient of his, with a perforation on the anterior wall of the stomach just beneath the diaphragm, who gave a history suggesting an escape of gas preceding the appearance of the actual peritonitis by several days. He recalls, in support of his explanation, the fact that many surgeons have observed perforations to heal satisfactorily after laparotomy in which no procedure was undertaken except that of drainage of the peritoneal cavity.

Summary

Three cases of free gas in the peritoneum without evident peritonitis (pneumoperitoneum) are reported, all presumed due to minute perforations of stomach or duodenum.

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Medical Memoranda

An Unusual Case of Meningococcal Meningitis

The occurrence of two attacks of meningococcal meningitis in the same patient within a short period seems worthy of record. The case is one of a series of 30 severe cases of this disease in which there were four deaths (two moribund on admission).

First Attack

The patient, a pagan private aged 25, was of good muscular physique. On admission he was unconscious, with marked signs of cerebral irritation. The general condition showed toxaemia, with temperature 104°. C.N.S.: neck very rigid, incontinence, Kernig's sign positive, knee- and ankle-jerks increased, with bilateral plantar extensor reflex, abdominal reflexes absent. Lumbar puncture yielded turbid fluid under pressure; globulin was increased; centrifuged deposit contained pus cells and scanty meningococci. Two grammes of soluble sulphapyridine were given intravenously, and the same amount four hours later; then 1 g. of sulphapyridine intramuscularly four-hourly. (Total course of 35 g.)

Two days after admission the breathing became distressed, with moist rales in both lungs and patchy consolidation. Recovery took place from this hypostatic pneumonia. Five days after admission the patient suddenly became unconscious and had repeated convulsions. Spasmodic twitching began in right facial muscles, with conjugate deviation of eyes to left. The spasm spread to the muscles of the upper and lower limbs on the right side, finishing with conjugate deviation of eyes to right and spasms of the left side of the body. Convulsions ceased after one hour, and further recovery was uneventful. Lumbar puncture gave clear fluid; no increase in globulin, cells 7 c.mm. in centrifuged deposit. No micro-organisms seen. The patient was discharged fit on March 1 (21 days after admission). He had no complaints and was ambulant during the last 12 days. He returned to full duty.

Second Attack

The patient was readmitted on March 27 complaining of headache and pain in the back of the neck for 24 hours. Condition on admission: temperature 103°; neck rigidity marked; Kernig's sign positive; knee, ankle, and abdominal reflexes absent; plantar reflexes not obtained. Lumbar puncture yielded cloudy fluid under pressure; marked increase of globulin; plus cells and meningococci present in centrifuged deposit. Soluble sulphapyridine, 2g., was given intravenously, and sulphapyridine, 1 g. intramuscularly, every four hours (total course of 53 g.).

Sixteen days after admission patient was afebrile and ambulant. On the 17th day he complained of weakness on the right side of body. The temperature was 100.8°. There was right facial palsy with general loss of tone and power of the muscles of right upper and lower limb. Pupils reacted equally to light and accommodation and were equal in size. Movements of the tongue were unaffected. Hearing and vision were normal. Reflexes were generally sluggish except for increased abdominal reflexes on the left side.

His general condition deteriorated, with increasing right-sided weakness and increasing neck rigidity and a positive Kernig's sign. White cell count showed a leucocytosis of 17,000 with 70% polymorphonuclears. Lumbar puncture: turbid fluid with increase of globulin, pus cells, and scanty meningococci in deposit. He was transferred to another hospital so that further investigations could be carried out. Death took place shortly after transfer. Post-mortem examination disclosed a superficial cerebral abscess over the left temporal lobe. Direct smear showed scanty meningococci.

I am indebted to Major P. E. Rees-Davies, officer commanding, for permission to publish this case.

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Reviews

OCCUPATIONAL THERAPY

The Rehabilitation of the Injured. Occupational Therapy. By John H. C. Colson. Foreword by E. A. Nicoll, M.D., F.R.C.S.Ed. (Pp. 226; illustrated. 15s.). London: Cassell and Co. 1944.

The ideals and aims of rehabilitation have been reiterated *ad nauseam* in all sorts of places and on all sorts of platforms. It is, as Lord Horder has said, a subject so much in the air that it is in danger of remaining in the air, and any contribution that brings it down to earth is to be welcomed. The present volume certainly does that. It is, we are told, the first of a series of books which the author is writing under the general heading of *The Rehabilitation of the Injured*; and occupational therapy is dealt with first, not because it is more important than its stable companions—remedial exercises, recreational therapy, and physiotherapy—but because it is the one about which there is the greatest dearth of practical guidance.

The author treats his subject, not from the diversional standpoint but as a disguised form of remedial exercise used for the re-education and redevelopment of specific muscle groups and the mobilization of specific joints. The disguise takes the form of purposive movements with a creative interest, and in his interpretation of the latter the author is not fettered by over-artistic tendencies. A well-scrubbed lavatory floor is as much an object of beauty to the man who has scrubbed it as an exquisitely woven scarf of many colours—or so it would be in any department over which Mr. Colson held sway.

The basic principles of remedial exercises are expounded in an early chapter, and it is shown how these can be preserved in occupational therapy. The next section deals with a variety of handicrafts, each of which is discussed under three headings: (1) "Remedial Use," which deals with indications, aims, craft analysis, and remedial application; (2) "Craft Technique," which gives clear working instructions for those who wish to learn the occupation; (3) "Constructional Work," which amplifies the previous section. This arrangement of material makes the book extremely useful to the busy surgeon who wishes to acquaint himself with the principles of occupational therapy but has neither time nor desire to wade through a mass of technical detail. The crafts chosen are simple enough to be learned by short-term patients, and most of them are within the compass of the dull and the "ham-handed" as well as the intelligent and dexterous, a point not always sufficiently appreciated. In the section on weaving several ingenious looms are illustrated. These are adapted respectively for knee, ankle, shoulder, forearm, and finger cases. Finally, there is a description of the author's "universal" loom, which, despite its almost frightening resemblance to a prehistoric Wurlitzer organ, manages to incorporate the remedial possibilities of all the lot.

There is a special chapter on woodwork, with a section devoted to various outdoor and indoor occupations ranging from simple domestic chores to really heavy timber work suitable for the final stages of hardening. This attitude towards occupational therapy is refreshing, and should go far towards removing the doubts of those surgeons to whom it is still "something rather arty-crafty, more suitable for old ladies with Colles's fractures than for miners with broken backs." The quotation is from the foreword by Mr. E. A. Nicoll, who goes on to confess that for his agnosticism he was compelled to sample each occupation in turn, and thereby found himself successively qualified as a farm labourer, a handicraft worker, and a domestic servant.

This book is clearly written and well illustrated. It has a practical and original outlook, and deserves to be read not only by occupational therapists but by every surgeon who is responsible for the treatment of injuries.

BIOMICROSCOPY OF THE EYE

Biomicroscopy of the Eye. Slit-lamp Microscopy of the Living Eye. By M. L. Berliner, M.D. Vol. I. (Pp. 709; illustrated. 84s.) London: Hamish Hamilton Medical Books.

Slit-lamp microscopy of the living eye is essentially the work of Alvar Gullstrand, who by 1911 had evolved the necessary apparatus, and of Alfred Vogt, who in ten years between 1920 and 1930 had mapped out the field so thoroughly that contributions by other observers have added little of fundamental significance—an achievement almost unique in the history of ophthalmology. It is fortunate that before his passing last year Vogt had succeeded in completing the third and final volume of his monumental treatise on the subject. This three-volume treatise is nominally the second edition of a slim single volume published in the early 'twenties, an English translation of which appeared at the time but is not readily available. Apart from that translation English literature has so far had to be content with a translation of a book by Koby and with the *Illustrated Guide to the Slit-lamp* brought out by Harrison Butler in 1927. Perhaps owing to the lack of an adequate text slit-lamp microscopy in this country and the United States has not occupied the place to which it is entitled in clinical ophthalmology. The one outstanding contributor to the subject in this country has been Mr. Basil Graves, and it is gratifying that in this new and sumptuous treatise full recognition is given to his pioneer efforts and substantial contributions.

Dr. Berliner has produced one of those rare books that profoundly influence clinical practice. Here, for the first time in English, is an adequate presentation not only of the technique of slit-lamp microscopy but also of slit-lamp appearances and the effect that this knowledge has had in clarifying clinical pictures. The present volume deals essentially with the conjunctiva and cornea, discussion on the lens being reserved for the second volume, which is still to come. How significant biomicroscopy has become in clinical practice is well shown by the successive chapters on the cornea. Here the English reader can at last find something like order in the chaos that passes for an account of corneal lesions in the standard text-books. Dr. Berliner has wisely avoided loading his text with illustrative individual cases, and has presented his matter in a systematic fashion in clear and crisp English. The lavish use of photographs, sketches, and colour plates make for easy reading in what is to many clinicians a relatively unfamiliar field. Perhaps the most pleasant feature of the book is that nowhere are the findings presented as esoteric knowledge divorced from the day-to-day work—a pitfall only too apparent in many individual contributions in periodical literature. The present volume concludes with a chapter on gonioscopy by H. S. Sugar. This derivative of slit-lamp microscopy has received hardly any attention in this country, and Dr. Sugar's factual account, drawing on a mass of personal observations, should help to popularize a method which is giving excellent results in the hands of our American colleagues.

From the point of view of the English reader there is one criticism which might perhaps be met by Dr. Berliner in preparing subsequent editions. There are so many models of the slit-lamp on the market that for geographical reasons different types have established themselves in different countries. Dr. Berliner does well to describe fully the original Gullstrand technique, for, as he points out, this was the basis of all further work. The early Zeiss model is still widely used in this country, and has many advantages over some of the later and more rigid types. Some account of this model would be helpful to many ophthalmologists.

INFANT PSYCHOLOGY

The Rights of Infants. By Margaret A. Ribble, M.D. (Pp. 118. $1.75 or 11s. 6d.) New York: Columbia University Press; London: Oxford University Press.

From a long study of psychological problems in adults and children, concluding with observations on 600 normal newborn babies in three different maternity hospitals in New York City, Dr. Margaret A. Ribble has written a fascinating monograph on *The Rights of Infants.* Her subtitle, "Early Psychological Needs and their Satisfaction," is a good description of the subject-matter of the book. Although Freudian views are frequently expressed, and the author explains that during part of her studies she worked with Anna Freud, there is a clear-sighted common-sense about Dr. Ribble's writing which puts Freud's contributions to psychology in proper proportion, and shows more insight into the modern mother's everyday problems than many a theoretical expert has usually shown that he or she possesses. Chapters on "learning to feel" and "getti

ready to think" are particularly good, and there is a section on "fathers" which might well have been longer. An early chapter on "oxygen hunger" is less convincing, for it does not seem to be entirely based on modern physiological facts. There is a good bibliography and a better index than short monographs of this type usually contain. Psychologists and paediatricians will find much valuable information and many stimulating ideas in these pages.

Notes on Books

There are certain matters, or particular aspects of a subject, which are most suitably dealt with through the medium of articles in appropriate journals rather than by the more substantial and permanent publication of a book, and this we feel applies especially to *The Surgery of Abdominal Trauma*, by Mr. GEOFFREY E. PARKER (J. and A. Churchill; 10s. 6d.). This short book constitutes a record of the author's experiences in abdominal military surgery obtained in North Africa and Italy, together with case summaries of 94 such cases. So far as general principles go the author agrees with the many writers of surgical articles which have already appeared in this *Journal*. In the case records he has critically examined the conduct of the cases and pointed out with commendable frankness where the treatment adopted might have been further improved. The over-all recovery rate of 66% is, as Col. J. M. Weddell points out in a foreword, a very creditable record, and shows that the methods advocated in the handling of these serious cases can be safely followed by newcomers to this branch of surgery.

The 1943 issue of the *Year Book of Industrial and Orthopedic Surgery* (Year Book Publishers of Chicago; $3.00) lives up to the high standard set by Dr. CHARLES F. PAINTER in previous editions. A wide range of subjects in the fields of traumatic surgery and orthopaedics is covered, and the concluding section deals with industrial medicine and surgery. Many new developments in orthopaedic surgery are covered. The editor presents a brief précis of each article with the minimum of editorial comment. This may sometimes tend to give a wrong impression: for instance, two favourable accounts of the Sister Kenny treatment of poliomyelitis are included, and the impression might be gained that informed opinion in the U.S.A. is in favour of the method. As is essential in orthopaedic subjects, the text is illustrated by a large number of good *x*-ray pictures and diagrams. The general lay-out is pleasing and the book is of a convenient size. It can be recommended to orthopaedic surgeons and others as a convenient summary of current orthopaedic articles which have appeared in the medical press recently; but once again we have to add with regret that this volume, like too many of the other Chicago *Year Books*, is not obtainable through Messrs. H. K. Lewis in London, and is said to be already out of print in America.

Mr. C. E. VULLIAMY is well known to many as the ingenious and learned author of two historical concoctions that satirized the Victorian age. He continues the pursuit in a new book *Doctor Philligo* (Michael Joseph Ltd.; 12s. 6d.). Once more he has "had access" to a private journal and reproduces passages from it, with an introduction and explanatory notes, and a portrait (dug up, we suppose, from some old photograph album) which professes to be that of John Arthur Sedley Tobias Philligo (1838–1915), who practised in and around the Cotswold village of Dropwater for 37 years. The parts of the journal "chosen for publication" cover the period 1887–1902 and they purport—very artfully—to record the day-to-day experiences and opinions of an odd but orthodox country doctor in the later years of Queen Victoria's reign, who had been educated at Harrow, Trinity Hall, and St. Bartholomew's. Those who relished *The Polderoy Papers* will enjoy this equally elaborate sequel. Mr. Vulliamy's fun is sedate. He draws his imagined characters and happenings against a careful background of social and political history in the larger world beyond Dropwater and the circle of Dr. Philligo's friends and family.

Facio-Maxillary Injuries, by KENNETH W. STARR, F.R.C.S., and A. J. ARNOTT, D.D.Sc., is reprinted from the *Dental Journal of Australia*. The authors of this small volume of some 70 pages have made a clear and concise condensation of their personal experience in facio-maxillary injuries while attached to the 113th Australian General Hospital. The book will be of interest to all surgeons and dental surgeons who have this highly specialized work to do, for the authors have been able to draw on the experience and teaching of all the large centres in this country. Though much of the detailed dental technique is missing the general principles are well stated and illustrated. The section on tissue replacement and the use of chip grafts deserves special mention.

Dr. A. H. DOUTHWAITE has once more taken charge of *Hale-White's Materia Medica, Pharmacy, Pharmacology and Therapeutics* for its 26th edition (J. and A. Churchill; 14s.). This very popular manual, first published 52 years ago, now reaches its 130th thousand. Dr. Douthwaite notes in his brief preface that the rapid extension of pharmacological research, especially in relation to the sulphonamides, anticoagulants, hormones, and penicillin, has necessitated some increase in the size of the book, which has been thoroughly revised; but in fact only 30 pages are added, and the price is unchanged. The new edition contains all the therapeutically important drugs described in the Fifth and Sixth Adenda to the *British Pharmacopoeia* and many references to monographs in the *Supplement* to the *British Pharmaceutical Codex*. Near the index, which has been progressively enlarged, is a list of drugs not essential in wartime or in which strict economy should be exercised because they are scarce.

The Advancement of Science, Vol. III, No. 9 (British Association, Burlington House, London, W.; price 5s.), is largely made up of the report of the Committee on Post-war University Education, which has already been published in separate form. The other contents include "Notes on Museums," by Dr. Alma S. Wittlin and Sir John Myres, and an article on "Science in the U.S.S.R.," by the Soviet Academician Alexander Fersman. Dr. O. J. R. Howarth, secretary of the association, supplies some notes on its organization and future.

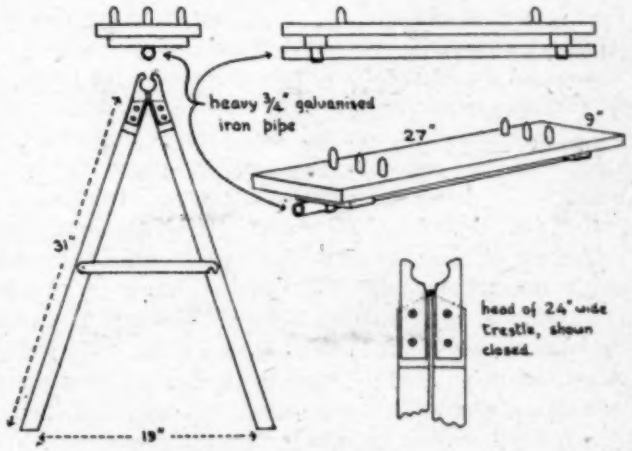
Preparations and Appliances

ROCKER FOR ARTIFICIAL RESPIRATION

Dr. C. W. HOPE-GILL (Billingshurst, Sussex) writes:

I have been so much struck by the efficiency and simplicity of design of a device for the carrying out of the rocking method of artificial respiration that I feel it deserves further publicity. The device has been constructed by Mr. A. G. Hampshire of the Billingshurst C.D. Rescue Party (leader, Mr. A. Smith), and consists of a rocker and portable trestle for use with standard C.D. stretchers.

Details of the rocker are shown in the accompanying diagrams, which were executed by Mr. A. R. Bielby, a member



of the party. The rocker is provided with six pegs spaced so as to engage with the mesh of a C.D. stretcher. The pegs are of 3/4-in. dowelling and project 1½ in. above the rocker. The centres of the outside pegs are at corners of a rectangle 17½ in. × 6½ in. At each end of the head of the trestle 1/4-in. iron plates are attached to form cups which hold the rocker securely when the trestle is erected.

In use the patient is firmly fastened to a stretcher while artificial respiration by Schäfer's method is applied. Meanwhile the trestle and rocker are erected, the rocker being placed in a horizontal position. The stretcher is then lifted and placed on the rocker. The pegs engage easily in the mesh of the stretcher and no further securing is necessary. Artificial respiration is continued without a break by the rocking method. The pegs are smaller than the square meshes of the stretcher. This ensures ease of mounting the stretcher on the rocker, and can be used to give the jerk usually considered desirable at the end of each stroke.

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RELIEF AND RECONSTRUCTION IN EUROPE

When the last war ended in November, 1918, an organization which supplied relief to Belgium and occupied France had been working for four years. Some two months were wasted in a struggle for control before the Relief Administration was set up, and further disputes delayed the relief to Germany promised by the terms of the Armistice; but observers were studying conditions in Europe, and ships had sailed with supplies in December, 1919. Hoover, who became Director-General of the Relief Administration, had four years' experience as Director of the Commission for Relief in Belgium and authority as Food Administrator in the U.S.A. This time preparations were begun early. In September, 1941, a meeting of representatives of the Allies at St. James's Palace agreed to set up a committee, under the chairmanship of Sir Frederic Leith Ross, to frame estimates of the amounts of materials that would be needed by the Allies. Over a year ago this committee submitted its estimates of the supplies required for a thorough reconstruction of Europe. After seven months of negotiation the agreement to form the United Nations Relief and Rehabilitation Administration (UNRRA) was signed on November 9, 1943, by the representatives of 44 United and Associated Nations. The objects specified were: to supply food, clothing, and shelter; to aid in the prevention of pestilence and in the recovery of health of the people; to arrange for the return of prisoners and exiles; and to assist in the resumption of urgently needed agricultural and industrial production and the restoration of essential services. The last two objects included the supply of seeds, tractors and livestock, raw materials, machinery, spare parts, and processing materials. This Administration makes use of the existing Boards both to obtain supplies and to control shipping; it has had no power to arrange production to meet estimated needs. Nor will UNRRA deal directly with relief in its early stages, as did the Relief Administration in 1919. After the first stages of military operations relief will be administered by Civil Affairs under military authority for a period estimated, provisionally, as six months; UNRRA appears to act as a middleman.

It has been extremely difficult to get an estimate of the degree of scarcity in Europe. We have known that even in Western Europe the rations supplied too few calories and that these rations could not always be obtained, though they have been supplemented by food from markets of varying shades of blackness Since the Allied Armies entered France there has been a tendency to underestimate the scarcity of food and its effects. Soldiers have seen abundance of foods which are scarce in England, such as butter, in producing areas in which they accumulated owing to breakdown of transport; they have been entertained by hosts who brought out their reserve stocks of food to celebrate their liberation. Many country districts are well nourished, and in Paris encounters with prominent patrons of the black market have given reporters a false impression of the nutrition of the population. Actually most people in the larger towns have lost 10 to 20 lb. in weight, children are thin and pale, and there is no reason to doubt the increase of tuberculosis. The great difficulty is transport: much of the rolling stock is unfit for use, and hundreds of railway bridges have been destroyed; repairs are delayed, as materials and engineers are needed for military operations. The 2¼ million inhabitants of Paris need some 2,000 tons of food a day, even in concentrated forms; before the war 6,000 tons were brought into the city daily, but at the end of September the total daily supply was only 1,500 tons. The milk supply had fallen to one-fifth of the pre-war level, and no dried or condensed milk has, so far, been provided. Those who can, cycle out into the environs of the city on Saturday and come back laden with vegetables. Prices are high: a simple meal in a modest restaurant costs 300 francs, while an ordinary worker gets about 3,000 francs a month. In southern France milk has been scarce; in Marseilles the bread ration at the end of September was raised to 200 grammes per day, which is only some three-quarters of the amount eaten per head in England, where bread makes up much less of the diet. It is said that there is enough food in France if it could be transported; but the adequacy of the supplies must be a matter of conjecture until communications are re-established.

In Italy conditions are far worse. The Germans tore up the railway lines and removed the rails. The transverse lines needed for bringing food from the interior have not been repaired. Many villages have been razed, and all power stations have been destroyed. With no goods offered to them in exchange and a Government without power or popular support, peasants will not surrender the food they produce. The aid promised by UNRRA—medical care, care for children and pregnant women and displaced persons—does not go to the root of the trouble. In the discussion about sending relief to Italy it was stated that the infant mortality rate in Rome had risen to 500 per 1,000; the Yugoslav representative replied that the rate in Dalmatia was 800. Actual production of food in Yugoslavia is hopelessly insufficient; few peasants are left to till the fields. Livestock have been taken and crops destroyed; the Germans have compelled the peasants to grow industrial crops in place of food. The people are eating bread made from acorns and using the cobs of the ears of maize. Sentries are dying of starvation at their posts. The Greeks have been in an exceptional position, as in peacetime they imported nearly one-third of their grain —about half a million tons of wheat. Their home production has fallen, and such supplies from outside as have been allowed have not been up to their pre-war imports. Of Poland we know little except that the Germans have taken large levies of food and are scorching the earth as they are driven back.

A large amount of food will undoubtedly be needed for relief; there should be enough grain to supply calories; but even in France animal products will be scarce because livestock have been killed off. Any stocks that have

accumulated will not be enough to make good this scarcity; the greater part of the animal products supplied as relief must come out of current production. Without some reduction in consumption in Great Britain and the U.S.A. the quality of the food supplied may be no better than after the last war, when the dinners provided for children contained no animal products besides lard and under a pint of milk during a whole week.

Even when the fighting stops the greatest difficulty everywhere will be transport. It is estimated that some 20 million people will want to return to their homes. They will throw an extra strain on a crippled and overworked transport system; if their migrations are not organized and controlled they will upset the rationing system of any areas through which they pass and carry with them the danger of epidemics. These dangers have not been forgotten, but no schemes for meeting them have been published. It is reported that the only connexion that UNRRA will have with Germany will be in repatriation of nationals of the United Nations who have been forced to work in that country, and bringing relief to those who favoured the allied cause or are in concentration camps. Whatever policy towards the people of Germany may be adopted in the end, the people of surrounding countries cannot be indifferent to the danger of epidemics among a population lacking housing, fuel, soap, and food. It is probable that in the end some hasty expedient to supply relief to the Germans will be adopted for sanitary reasons.

The great fault at the end of the last war was that large-scale official relief ended prematurely in the summer of 1919: food, clothing, and medical stores were supplied, but little was done to revive production in Europe. UNRRA, by its terms of reference, is limited to meeting urgent needs, and it is questionable how far its funds will do even this. The proposed industrial rehabilitation may be excluded and the agricultural programme cut down. At the second meeting of the Council of UNRRA in September members stressed that temporary relief and *ad hoc* rehabilitation will not restore Europe. The Council has drawn the attention of Member Governments to the need for providing further means for continuing rehabilitation. Seeing that one and a half years elapsed between the meeting at St. James's Palace in 1941 and the appearance of the first draft of the UNRRA agreement, and that a further seven months passed before the final version of the agreement was accepted, there is a danger that this recommendation has come too late.

THE HARVEIAN METHOD IN LITERATURE

In Harvey's time the Royal College of Physicians restricted its influence to a circuit with a radius of seven miles from London. Such parochialism is impossible to-day, and it is significant of the increasing part which the Provinces are expected to play in the work of the College that for the first time the Harveian Oration should have been delivered this year not in London but in Manchester, where Sir Edmund Spriggs chose for his title "The Harveian Method in Literature." The reason for the change of place was the Government's request that meetings should not be held in London under the conditions then prevailing. As the roll of orators mounts up through the centuries the difficulty of a fresh approach to the subject of Harvey's work increases, and we congratulate Sir Edmund on having found one. Much has been said and written on literary doctors, but to trace the influence of scientific thought on general literature is a novel and, as it proves, a fruitful idea. Harvey as a man of his time was not entirely freed from the bonds of scholasticism, as passages in his *de Generatione* show. It was one of Osler's profoundest remarks that we all drag about with us the chains of errors in which we were originally trained. Nor is it surprising that Harvey's discoveries were unpalatable to his contemporaries, for, as Wilfred Trotter said, there can be no approach to truth without a threat to one's personality; the individual world we build up dislikes interference. It is therefore to Harvey's credit that he followed as far as he could a method which the orator defined as "the use of observation and experiment guided by knowledge and by thought . . . Bacon was rather the preacher and Harvey the doer of the word." Sir Edmund went on to claim that a gradual approach to more truth in literature can be traced after Harvey's time. Imaginary romances began to be replaced by studies of real incident and of human nature; and on many later writers an influence came from those who had some scientific knowledge, not a few of whom had been medical students or practitioners. The study of natural law affects all mental processes, including observation, order of thought, self-criticism, and judgment. It will lead a writer to be true to physical facts and conditions. It will make him consider whether, in unfolding any human problem, he has looked around for adequate control observations before displaying the trend of his judgment or opinion. And of this thesis copious illustrative examples were given, supporting the speaker's view that even the novel and the poem acquired a more solid foundation with no detraction from beauty of expression or play of thought.

A particularly interesting part of Sir Edmund's oration was his study of pessimism in literature; several distinguished writers seem to have been led by the objective methods of science to a state of more or less misery, though they did not always live up to their doctrines, often "facing one way and rowing the other." Such unhappiness of outlook may be temperamental, or due to an unfortunate childhood or to ill-health. The attempt to know or deny what scientific method can neither assert nor exclude brings to some intellectual and sensitive persons a frustration, which is hardly reasonable though it may excite our sympathy. Because they cannot know all, they are tempted to say all is vain. It was, by the way, the medically trained Keats who recognized that one of Shakespeare's greatest characteristics was his capacity for "being in uncertainties, mysteries, doubts, without any irritable reaching after fact and reason." It is foolish to ply the universe with questions to which no answer could be given within our comprehension. As Sir Edmund phrased it, "the cure is not to fix one's goal too rigidly beforehand, but to subject oneself to experience. One's world can indeed be shattered to bits by trying to mould it nearer to the heart's desire." And he went on to point out to the pessimists that "it is unscientific to draw conclusions

from the morbid without taking into account control observations upon a large number of average people. Reality is opulent, various, and vital; deformity, mental or physical, is not the rule, and the aim of Nature is not death, but life." It is to the credit of medical authors that, though dealing with disease in their daily work, they have generally realized this fact. As our readers were reminded last week, Robert Bridges deliberately underwent a medical training because he believed he would be a better poet by practising a profession which brought him into contact with human life. "In general," said Walter Bagehot, "an author is out of the way of employing his own eyes and ears." This remark leads to the very crux of the Harveian method. Indeed it is abundantly clear that the scientific attitude has had profound influence upon literature and all human thought. After Harvey, we may add, Isaac Newton's discoveries coloured the whole thought of the eighteenth century, just as Darwin did in the latter half of the nineteenth, and as Freud is doing to-day. Conceptions of evolution and of the working of the unconscious mind are to be met with in every form of literaure.

By this oration Sir Edmund Spriggs takes his place in the distinguished roll of scholar-physicians, a roll which must ever increase if, undazzled by technical advances, medicine is to retain its position as a humane and learned profession.

SHAW VERSUS MEDICINE

"He who can, does; he who cannot, teaches," wrote Mr. Bernard Shaw in his revolutionary days, and for the past sixty years he has been teaching and preaching at a good-humoured English public who have richly rewarded him for the amusement he has provided them. For the past 38 years hundreds, perhaps thousands, of doctors have cheerfully handed in their money at the box office in order to get a good laugh out of *The Doctor's Dilemma*, quite unperturbed by the attack made by Shaw upon the medical profession, because it was very plain that he did not understand the nature of a doctor's work. Whatever else he has learnt in order to try to teach others, he seems not to have learnt one lesson—that of humility; and it is the absence of this quality in his recent book which has dismayed some of his reviewers. Since the publication of *The Doctor's Dilemma* in 1906 Mr. Shaw seems to have confirmed himself in his own ignorance of medical matters, and now abuses the great position he holds in the public life of this country by misrepresenting facts. "Men," he writes, "have submitted to castration . . . but compulsion of everybody willynilly to dangerous blood poisoning repeated for every virus discoverable by the new electron microscope, to sterilization, to extirpation of the uvula and tonsils, to birth delivery by the Caesarean operation, to excision of several folds of the bowel and of the entire appendix, to treatment of syphilis and malaria by doses of mercury and arsenic, iodine, and quinine, all of which have been advocated by eminent physicians and surgeons, and some of them legally enforced to-day. . . ." This suggestion of compulsion is not true of medicine in this country. He says of the modern treatment of venereal disease, presumably meaning the treatment of gonorrhoea by sulphonamides and penicillin, "There is the gravest doubt as to whether the prescribed treatment of venereal disease is not mischievously mistaken." Of salvarsan he observes, "The truth was that it combined mercury with arsenic": the truth is that mercury does not enter into the composition of salvarsan. Mr. Shaw goes on, "When, as in the case of syphilis, the suppressive agent is a malignant poison, it is strongly held in certain quarters that the terrible secondary and tertiary recurrences of the worst symptoms are not the disease at all but the specific effect of the poisons with which it has been treated." Of surgeons he observes that "scepticism as to the utility of drugs is shared by surgeons. They use drugs only to produce temporary insensibility to pain." This remark shows the extent of Mr. Shaw's ignorance of modern surgery. Mr. Shaw brings up again his old bugbears of vaccination and vivisection, and, as he apparently wishes to be seriously considered as a statistician, we have invited the foremost medical statistician of the day, Prof. Major Greenwood, to examine the statistical exercises of an amateur (see page 570 this week). Some insight into the emotional basis of Mr. Shaw's ratiocination is provided by his statement, "Of all legalized tyrannies none is more unbearable than those which lay violent hands on us and our children and inject poisons into our veins or thrust them down our throats." Mr. Shaw thinks that Isaac Newton wrote nonsense when he passed from mathematics to theology; it is possible that Mr. Shaw is not intellectually so much greater than Newton that, when he puts playwriting aside and turns to pathology, he can write good sense.

"CHILD SPACING"

In 1925 Robert Woodbury, then director of statistical research in the Children's Bureau, U.S. Department of Labour, published a monograph entitled "Causal Factors in Infant Mortality, a Statistical Study based on Investigations in Eight Cities." The conclusion he reached was that "infants born after short intervals had a markedly high rate of mortality from all causes. Evidently some factor that is intimately connected with the short interval—perhaps through the influence of frequent births upon the mother's health—affected adversely the chances of life of the infants who followed closely after preceding births." In round figures, infants born after an interval of but one year after the preceding birth suffered a mortality rate 1½ times that of infants born after an interval of two years or more. Dr. Nicholson J. Eastman[1] believes that this monograph has had more influence on the pattern of planned births in the U.S.A. than any half-dozen other publications. He describes Woodbury's monograph as a reserved and scholarly study, largely objective in character. Though Woodbury made no suggestion as to what might be done to reduce infant mortality in the short-interval group, those interested in the furtherance of birth control were quick to acclaim this publication and draw their own conclusions; indeed, this monograph has become the corner-stone of contraceptive practice and of the "child spacing" now so readily advocated by the medical profession. The facts and conclusion of the Woodbury study have even been spread abroad by the *Readers Digest*.

Because of the wide influence of this monograph Eastman felt that it would be wise to review that portion which dealt with the short-interval problem. This he has done, and has in turn presented a careful analysis of a further 38,000 obstetrical cases. Though he does not question the accuracy of the figures in the Woodbury study, he shows that the usual interpretation has been false in one important aspect. Eastman divided his cases into four groups according to the interval since the last delivery: these were—very brief (less than 12 months); brief (13–24 months); moderate (25–48 months); and long

[1] *Amer. J. Obstet. Gynec.*, April, 1944.

(more than 48 months). The stillbirth and neonatal death rate was much higher in the "very brief" group than in the three other groups, largely confirming Woodbury's data. At first sight this might be interpreted as wholly due to the short interval between births; on further examination, however, the fallacy of this argument was apparent. If a full-time child is to be born within a year of the preceding birth there are only three months available for conception; in contrast, there are five months and eleven months respectively in which conception may take place if a premature birth or abortion is to occur. In other words, one would expect the incidence of premature labour and especially abortion to be disproportionately high in this group; this is borne out by the data.

Eastman's analysis is careful and exhaustive, and his conclusions are of the greatest importance to those who have the welfare of the community and of its mothers at heart. He believes that the following conclusions are clear-cut and inescapable:

"(1) Infants born from twelve to twenty-four months after a previous viable delivery (that is, during the second year) have at least as low a stillbirth and neonatal mortality as do infants born after longer intervals. (2) The longer the interval between births the more likely the mother is to suffer from some form of hypertensive toxaemia of pregnancy. The incidence of this complication is lowest when the interval is twelve to twenty-four months, significantly higher when it is twenty-four to forty-eight months, and much higher when it exceeds four years. In the present study this was equally true of white and coloured ward patients and of private patients. (3) In patients who have had a previous hypertensive toxaemia of pregnancy, the likelihood of repetition becomes progressively greater as the interval becomes longer. (4) The incidence of the following conditions is no greater when the interval is twelve to twenty-four months than when it is longer: premature labor, anaemia, post-partum haemorrhage, and puerperal infection; nor are mothers in this brief interval group less able to nurse their babies. The weight of the mature babies was approximately the same regardless of the interval."

He believes, and has shown without reasonable doubt, that the high stillbirth and neonatal rate in the "very brief" group is largely due to a much higher proportion of abortions and premature births than occurs in the other groups. Though the time factor is chiefly responsible for the high incidence of abortion and premature labour in this group, he does not exclude the possibility that other influences may play a part. The data suggest that pregnancies *conceived* within five months of childbirth do show a slight increase in the incidence of premature labour. Perhaps more important, he believes that in recommending birth spacing for the health of the mother and infant the medical profession may be overlooking the greatest talisman that pregnant women can possess—namely, youth. Child spacing means maternal ageing, which, after an optimum age (probably in the early twenties), inevitably means a slightly higher risk to the mother and child.

THE NURSING OF TUBERCULOSIS

The nursing of tuberculosis is a more complicated art than it used to be. No longer are sanatoria merely rest homes in the mountains. The modern hospital for treating pulmonary tuberculosis carries on much acute surgery, and a corresponding advance is needed in the skill of ward sisters and nurses. A report by the Tuberculosis Association and Joint Tuberculosis Council presents the situation—a difficult one—as it confronts both professions to-day. Some 8,000 nurses are needed for the 25,000 beds used in the treatment of pulmonary tuberculosis, and there is a serious deficit of likely candidates. Yet, according to this report, the risk of tuberculous disease in sanatorium nurses is no higher than among general hospital nurses. Although there is a widespread belief that a girl should not enter a tuberculosis hospital under 21, the committee feels that 21 is no safer an age than 18. Supervision and early detection of the symptoms of disease (particularly of Mantoux-negative nurses) is more likely to take place in a sanatorium than in a general hospital, and is, of course, infinitely more feasible for nurses than for girls in industrial life. The joint committee proposes changes in the education of nurses for this branch of work. The Tuberculosis Association certificate is generally recognized as the hall-mark of postgraduate study, and the committee thinks holders of this certificate should obtain State recognition in the form of a supplementary register. In this they would have a status corresponding to that of fever trained nurses, who are entered in a special section of the *Nurses Register*. Failing a State register, the committee recommends that holders of the Tuberculosis Association certificate should be allowed to use the title "tuberculosis nurse." There is everything to be said for a system of training and education which encourages members of the nursing profession to go in for this neglected branch of work. The opportunities for an intelligent nurse in the treatment of tuberculosis to-day are wide. She need not fear that any of her gifts will remain unused. The phobia of infection remains, and we hope this report will make it more widely realized that the nursing of tuberculous patients, conducted under conditions proper to a sanatorium, and with adequate medical supervision of the nurses in the form of *x*-ray examination and tuberculin tests, is no more dangerous for a girl than the hygienically unsupervised life in a factory or office.

FITTING THE MAN TO THE JOB

The July-August issue of *Industrial Welfare and Personnel Management*, the journal of the Industrial Welfare Society, includes an article on personnel selection in post-war industry by Brig. J. R. Rees, consulting psychiatrist to the Army. There are many in industry who are anxious to carry into their peacetime industrial groups the techniques of "man-management" and personnel welfare so usefully and satisfactorily employed in the Services. Brig. Rees speaks for the Army and considers there is no more interesting phase of its experience of personnel management, nor one that has greater implications for post-war industrial efficiency, than the methods used to secure the right man for the right job—personnel selection, grading by intelligence, and scientific placing. The Army has shown that if men and women can be fitted into jobs for which they have aptitude, and in which they can be interested and gain pride and competence, they do better and remain fitter than they otherwise would. The Service treatment of the "dullard" group is but one instance. From this group in normal times comes the country's highest sickness and delinquency rate. The Army has found that if dull men, even very dull men, can be properly employed, as a group, on jobs within their competence and under kindly and tolerant supervision, they do first-class work—doing their own particular job much better than intelligent men do, and having a very low sickness and crime rate. Perhaps even more important is the method of choosing key men and women for jobs that require authority and leadership. The Army has put much scientific work and thought into methods for selecting officers. The underlying principle is capable of adaptation for the selection of officers for purposes other than war—including directors in industry.

MR. SHAW ON DOCTORS

BY

MAJOR GREENWOOD, F.R.C.P., F.R.S.

[*As Mr. Bernard Shaw has attacked medicine and the medical profession in his new book "Everybody's Political What's What," we asked Prof. Greenwood to pick out some points for criticism in a review that should help non-medical as well as medical readers to get the matter in perspective.*]

If it is possible for a humane man living in the year of our Lord, 1944, to be happy, Mr. Bernard Shaw should be a happy man. He began life with few material advantages, his earlier writings were consistently and grossly misrepresented; now, in the evening of his days, he is among the half-dozen writers of English universally known *and* read. Those who disagree most vehemently with many of his opinions will, if they have what Disraeli described as the rare virtue of gratitude, thank him for some happy hours and valuable instruction. Mr. Shaw has never hesitated to denounce other men in the strongest language, not only when he was young and unknown, but now, when he is old and famous. If, in commenting upon some of Mr. Shaw's assertions, I forget what is due to a man old enough to be my father, I hope that the Editor will use his blue pencil ruthlessly. Every man is in debt to his profession, but our profession has no need of wounding invective; *non tali auxilio nec defensoribus istis tempus eget.*

We all know that words change in meaning with time; the word *prove* is a good example; once—as illustrated by the saying "The exception proves the rule"—it meant to test or to try; now it means to most of us "to demonstrate the truth of by evidence or argument." In this latter sense we can hardly prove anything intellectually save by a deductive process. I cannot prove there are milestones on the Dover Road to a man who has never left Boston. I can say I have seen them; neighbours of his who have travelled along the Dover Road can say they saw them. If he is a normal being he will accept that evidence and also believe there are milestones on the Dover Road; but if the existence of those milestones conflicts with some doctrines he believes intensely the testimony of his neighbours would not shake his conviction, nor would the testimony of his own eyes. Few people hold beliefs inconsistent with the presence of milestones on the Dover Road. Many believe that the injection of "filth" or "poisons" into the bodies of healthy children is horrible; Mr. Shaw is one of these people, and no evidence we could produce would shake his belief. All one can do is to try to state a case fairly for the consideration of those whose beliefs are not so vivid; and, of course, one is under two disadvantages. The first is that Mr. Shaw is one of the most accomplished writers of our time; the second, that he is not hampered by regard for dull exactitude of statement. He says himself: "It is always necessary to overstate a case startlingly to make people sit up and listen to it, and to frighten them into acting on it. I do this myself habitually and deliberately" (p. 49).

The method of Miss Pross applied by a first-rate writer is formidable, because one is easily betrayed into anger. Thus, when we are told that Lister was a half-wit, or read an innuendo that diphtheria prophylaxis has had something to do with the increased prevalence of epidemic poliomyelitis, or—worst of all—a, to me, horrible insinuation that the treatment of venereal disease *may* be responsible for its signs and symptoms, there is a temptation to play Mr. Shaw's own game—viz., to repay abuse with abuse and by playing it badly to lose the game.

Mr. Shaw writes: "Eminent mathematicians of my acquaintance have gone to Monte Carlo, where, having proved that certain results of spinning the ball on a roulette table could occur only once every thousand years, they saw them occur three times in seven weeks." No mathematician, however eminent, could prove—in either sense of the word—that any result could occur only once in any number of trials; what he could prove (in the modern sense of the word) is that on a particular hypothesis such or such result will on the average occur only once in so-and-so-many trials. If on trial the result happens much oftener—or much less often—than his calculation requires, he will ask himself whether the hypothesis upon which the calculation was based may not be inapplicable, and will reject the hypothesis *if* there is an acceptable alternative. Suppose we have a statistically ideal, and very rarely realized, experiment. We have patients all of the same age, sex, occupation, nationality, all at the same stage of a disease, half treated expectantly, half receiving treatment A. Suppose that a statistician fulfilling one of Mr. Shaw's statistical requirements—viz., he must *not* be a "doctor"—makes the appropriate calculations and finds that if remedy A had no influence the advantage in fatality rate the treated had over the untreated would occur only by "chance" on the average once in a billion trials. Then, if A has a rationally acceptable basis, most people will prefer the hypothesis that treated and untreated groups were not *in pari materia* to the hypothesis that a very unlikely event has happened. At the risk of being pedantically dull, I must stress this point. If treatment A had consisted in sticking a postage stamp (without the knowledge of patients or staff) on half the bedsteads, odds of billions to one would not generate any belief in the therapeutic virtues of postage stamps. Of course astronomically improbable events happen every day. The chance that a pack of cards shall be dealt in *any* assigned order is the same and less than one in a billion; we suspect a joke or a fraud only if the particular order in which the cards fall suggests design.

Here we have the case for the scepticism of a Charles Creighton. If vaccinia was a different disease from variola, or, as I think we should now say, the viruses had no biological kinship, Edward Jenner was doing something wholly without rational precedent or analogy. Like many book-learned men, Creighton despised the views of the unlettered, and, judged by a Creightonian standard, Jenner was unlettered. Creighton contemptuously dismissed Jenner's observations on the habits of the cuckoo not recorded by learned authors as a tissue of absurdities (they have been verified in our own time), and to him vaccination was also a scientific absurdity. If, therefore, statistics did—in the sense of my comparison—show long odds against the differentiation of the groups vaccinated and unvaccinated being a chance happening, he could not accept a hypothesis that vaccination itself differentiated the groups. He did not adopt so readily the view that the statistics were faked, as Mr. Shaw does—no doubt Mr. Shaw would remind us that Creighton was after all a doctor—but he did not accept their prima facie suggestion. All through, the gravamen of his charge was the biological absurdity of the process.

Almost a generation after Creighton's critique of Jenner, Monckton Copeman successfully inoculated a monkey with variola and by innoculation from the monkey produced vaccinia in a calf; later still Mervyn Gordon by cross-immunization found an affinity between variola and vaccinia virus, but none between variola and varicella. So it seemed to most of us, not of course to Mr. Shaw, that Jenner's preposterously false analogy was after all a true analogy—a lucky guess or an intuition of genius. That is why to moderately sceptical people—I *have* been told that my own department is known as the cold-water department, so perhaps I am not wildly credulous—it is easier to accept the hypothesis that the advantage on paper of the vaccinated is not due to chance.

Mr. Shaw, of course, would agree: he would offer at least two alternatives to "chance." The first—the one I think he prefers—is that the statistics have been deliberately falsified by the doctors; the second, that vaccinated persons have generally been better fed and better housed than the unvaccinated. I will not play Mr. Shaw's game by flying into a temper, but try to consider *how* such data as those of the Metropolitan Asylums Board hospitals, which monotonously showed in each large age group a much lower fatality rate on the vaccinated than on the unvaccinated, could have been faked. We must believe that the doctors were such masters of prognosis that on the admission of a patient they could tell whether he would die or live, that, however obvious the vaccinal scars on an arm, obvious to the nurses and the patient's friends, they could go on weighing down the scales of the unvaccinated group with well-vaccinated patients doomed to perish. If I favoured Mr. Shaw's vocabulary I should say that only a half-wit could believe anything so silly. The alternative that only well-fed and well-housed people were vaccinated—which dialectically makes hay of the complaint that compulsory vaccination was an odious tyranny

practised on the poor—is not supported by any cogent data and has against it Macdonnell's analysis of Glasgow experience (it is true that a doctor, Brownlee, provided the data, but then Macdonnell was not a medical man, which guarantees his statistical impartiality by Shavian standards).

But Mr. Shaw will still boast that after the introduction of compulsory vaccination there were epidemics of smallpox. It is true that Jenner himself believed, fanatically believed, that no properly cow-poxed person could take smallpox, so that if after compulsion all the inhabitants of England, France, and Germany alive in 1870 had been vaccinated the event proved that Jenner was mistaken. Of course even in Government-fearing Germany many were not vaccinated, and the question is not whether Jenner put his claim too high but whether on the whole, on the average, vaccination has saved lives. Many people have lost their lives in Anderson or in Morrison shelters, but I think when the time for rendering a statistical account comes it will be found that these shelters saved lives. Our gratitude to the inventors will not be diminished even if we find—as we may—that the value of the protection was less than they had hoped it would be. Mr. Shaw is not one of Disraelie's rarities; he is not a grateful person. He agrees that the revolution in surgical practice due to Lister saved many lives, but because Lister overstated a case and did not anticipate discoveries made fifty years later Lister is a half-wit at whom a gentleman who is not known to have saved any lives may point the finger of scorn.

I have lingered over the smallpox tale, tedious as it must be, having been told much oftener than twice; but the case for diphtheria prophylaxis involves no new statistical principle; the pros and cons are as before. One relatively new argument has been used—namely, that before active immunization was introduced diphtheria mortality and morbidity rates were declining and we have confused *post* and *propter*. It is only a relatively new argument, because Creighton had argued that by the end of the 18th century smallpox was an obsolescent disease. The best discussion I know is in Dr. W. T. Russell's recent report to the Medical Research Council (that Mr. Shaw may not dismiss Dr. Russell unread, I note that he is a Doctor of Science, not Medicine). In New York and in Toronto the annual case rates of diphtheria were declining from the beginning of this century; in the former city diphtheria prophylaxis was not introduced on a large scale before 1928, in the latter not before 1931. Dr. Russell graduated the trends of the pre-immunization periods by exponential curves. He then extended, extrapolated, the curves over the period of active immunization. The result was that the "predicted" rates were much higher than the observed rates. This, impressive enough to a layman, is even more so to a statistician who plays the fascinating game of prophecy, because one almost always finds that the prophecy is better than the truth: part of the reason is that as one approaches zero rates improvement is likely to be much slower than the comparatively simple curves which give a good graduation allow. Most people will, I think, accept the result as cogent evidence that active immunization did greatly quicken up the decline. The alternative, which Mr. Shaw will adopt (unless, of course, he prefers to believe that from the start of immunization the statistics were faked), is that aesthetic sanitation which had reduced the incidence so successfully over 28 years was suddenly intensified in these two cities just when active immunization began.

Mr. Shaw devotes a chapter to the praise of statisticians, and although I am excluded from this class by the possession of a medical diploma, I still wish to be grateful, because I can remember the time when there was no passion for statistics in the medical profession. But a passage on page 246 supposed to be descriptive of writers in *Biometrika* forces one to conclude that it is not only a medical qualification which obstructs admission to or involves expulsion from the statistical paradise. Should a non-medical statistician reach conclusions of which Mr. Shaw does not approve, his mathematics will not save him—he too will be a half-wit if not a knave, in fact "as credulous, as prejudiced, as thoughtless as to the facts they were measuring and the assumptions from which they started as Isaac Newton himself."

I have confined myself to an examination of the case for and against modern methods of prophylaxis, because, whether my conclusions are right or wrong, at least I have studied the evidence closely and had a good deal of experience of statistical methods. Other topics of Mr. Shaw's book tempt me to be polemical. Mr. Shaw seems to me wholly to misunderstand the fundamental principles of the experimental method, and it seems a pity he did not listen more attentively to the expositions of his friend Sir Almroth Wright—one of the very eminent investigators not classed as a half-wit. But many colleagues understand that subject better than I do, a remark which applies to Mr. Shaw's view of medical tyranny.

SOCIAL MALAISE AND DISORDER

VIEWS OF THE MEDICAL WOMEN'S FEDERATION

For some time the Medical Women's Federation has been anxious to express its views on certain aspects of social medicine. At a recent meeting of its Council the work of a small subcommittee was approved in the form of the memorandum printed below:

Medical women are frequently invited to express their views on the reported increase in venereal diseases, and the Medical Women's Federation considers that it may be timely, in view of anticipated medical and security legislation, to set out in general terms conclusions collectively arrived at as a result of the experience of its members during the last war, the uneasy interval, and this war. While there is naturally divergence of professional opinion as to the best methods of handling so controversial a problem, there is complete agreement that the eventual solution must depend in large measure on a clear recognition of the relation of venereal disease to social and personal maladjustments, which has been much accentuated by war conditions. V.D. cannot be regarded merely as an acute contagious illness which affects only those directly infected; it can never be eradicated solely by medical precautions and treatment however sound and effective in themselves; and it is to the wider implications of the presence of venereal diseases, with their deplorable results on the health of the nation, that the Federation desires to direct attention.

The Federation holds the view that doctors, while having an obligation to society for the treatment of individual patients, have also a duty to interest and educate public opinion in medico-social questions so that these may be approached with understanding and sympathy.

It is realized that the war has brought out splendid qualities in many people, and that young people in particular are displaying magnificent courage, endurance, and selflessness; yet at the same time, partly as a result of the very conditions calling forth such qualities, it is clearly seen that there also exists an accompanying state of serious social malaise. Social disorders are associated with a failure to develop and practise an ideal of conduct, as well as with a lack of discipline and sense of personal responsibility. Such conditions are likely to lead to an increased state of unrest and a diminishing degree of happy satisfaction in life.

Among the signs of social malaise and disorder are found:

1. A lowering of the standards of honesty and of consideration for others.
2. An increase in delinquency, including juvenile delinquency.
3. A more widespread and growing habit of indulgence in alcohol among young people.
4. The loosening of family ties.
5. Sexual incontinence, promiscuity, an increase in soliciting, and a consequent rise in the incidence of venereal disease.
6. The toleration of a low standard of certain types of reading matter and of public entertainment.

We believe that an acceptance of materialistic ideals as the main standard for living has led to spiritual poverty and unthinking egoism. The sense of insecurity of life, the loss of home background and other dislocations of war have added to the confusion. The immediate satisfaction of an impulse is often accepted as justifying any action. This is seen in the increase of petty misdemeanours, and still more in irresponsible sex relationships.

We believe that continence (apart from marital relationship) is the ideal for both sexes if the vitality of the race and the happiness of individuals is to be ensured. We condemn the

view that incontinence is not detrimental so long as precautions are taken against disease and pregnancy. It is now recognized that continence is not harmful to either sex.

All primitive urges supply the energy for man's activities; in order that they may find effective and satisfying outlets, certain basic wants must be met. These include stability of family life, education in its widest sense, scope and training for suitable work, encouragement in the right use of leisure, opportunity for independence of thought and creative activities, and development of that spiritual outlook which alone can secure an active, happy, and ordered society.

For the achievement of this ideal, the Medical Women's Federation presents the following as minimal essentials:

1. The recognition of the vital importance of home and family life with opportunities for early marriage, and the provision of good living conditions within reach of all.
2. Training from an early age in the development of personal moral responsibility and social obligation.
3. Religious training both at home and at school.
4. Physical training together with instruction in the functions, hygiene, and control of the body.
5. Training in the understanding and expression of the emotions.
6. Extension of education into adult life. This should include the teaching of parentcraft to both sexes, and opportunities for manual and creative work.
7. The encouragement of a high standard of literature and public entertainment, and of appreciation of beauty in Nature and art.
8. The provision of suitable opportunities for social contacts and recreation.
9. Adequate provision for the disabled and for those who are inherently irresponsible.

The Federation is fully aware that there is nothing new or revolutionary about such recommendations, but considers that they should be given due weight in the formulation of proposals for the prevention and control of venereal disease and other social disorders.

UNIFORM STANDARD FOR PENICILLIN

SIR HENRY DALE'S STATEMENT

Sir Henry Dale, P.R.S., announced to a Press conference on Oct. 20 that international agreement had been reached by the Health Committee of the League of Nations on a uniform standard and unit of penicillin, and that there could be no doubt that workers in this country and America, and eventually throughout the world, would be using the same standard dosage. The agreement was arrived at at a meeting in London attended by representatives of Great Britain, the United States, Canada, Australia, and Free France.

In a historical retrospect Sir Henry Dale said that it was in 1921 that the Health Committee first took in hand the question of measurement of a number of biological remedies in terms of their activity. This was done in order to obtain international uniformity, so that one unit of activity would mean the same wherever it was prescribed. The first agreements of this kind were obtained in the case of antitoxins, notably the antitoxin of diphtheria. Another good example was the standardization of insulin in 1925. The same standard was adopted outside the League—in Russia, which was not then a member, and in the United States, which never became a member; the same standard was continued in Germany and Italy after they had left the League. Standardization was also applied to hormones and vitamins.

International Agreement

The newest remedy, penicillin, naturally called for similar action at the earliest possible moment. It had been a simple matter during the war to arrive at an international agreement, because here was one of the few discoveries which, it could be claimed, had been made entirely in this country, though, on the other hand, the developmental research and the enterprise responsible for a large part of the production of penicillin was due to effective action in the United States. Thus, while it was a British discovery, the United States had undertaken a large part of the manufacture and supply. The manufacture actually started earlier here than there, but at the time penicillin came in, practically all manufacturing resources were absorbed by war production, while the United States was not similarly embarrassed.

The new international standard penicillin would be finally purified and crystallized in the United States, but the material for this purpose would be freely supplied by manufacturers here as well as across the Atlantic. There was no substance in the talk about trade rings in the manufacture of penicillin. The manufacturers in both countries had pooled their information from the very first and had given their results to the Medical Research Council, thus making the manufacture of penicillin during the war a real national effort.

At the recent conference in London which had determined the standard there were present three representatives of the U.S.A., three of this country, together with Dr. Cameron of the Health Department in Ottawa, and Major Bazeley of the Commonwealth Serum Laboratory, Canberra. After these arrangements had been made the possibility of contact with liberated France was opened up, and an invitation was sent to Dr. J. Trefouel, director of the Institut Pasteur in Paris, who joined the conference in time to review the provisional agreement and give his confirmation. A number of other persons had joined in the deliberations, notably Sir Alexander Fleming, who could be described as the father of penicillin, and, until he went to Australia, Sir Howard Florey, who brought penicillin to the practical stage. Other specialists were present from South Africa and India. The results which the conference had achieved, said Sir Henry Dale, when viewed as a contribution to scientific knowledge might seem small, but the setting up of a world-wide standard was of obvious importance.

WAR AND COMMUNICABLE DISEASES

Brig.-Gen. James S. Simmons, speaking in New York at the 73rd Annual Convention of the American Health Association, discussed various phases of the war and communicable diseases.

Speaking of the health problems that had arisen during the past 15 months in Sicily, Italy, and a good portion of North-West Europe, General Simmons said it should be constantly borne in mind that the entire civil public health programme was being implemented by a very small number of American and British medical officers. Reliance must of necessity be placed largely upon local resources in medical personnel.

Typhoid and dysentery, typhus fever, smallpox, malaria, venereal disease, and scabies had so far offered the greatest problems. In both Italy and North-West Europe the incidence of typhoid and paratyphoid fever rose in the wake of combat operations, but sharp outbreaks had been limited to a relatively few communities. In January, 1944, the peak month, over 1,000,000 new cases were reported, but the epidemic was quickly controlled with only 39 cases being reported during the last week of February. Typhus had not yet been a problem in North-West Europe, though the test would doubtless come during the winter months.

The civil public health programme called for early re-inauguration of the smallpox vaccination programme. Despite this, two outbreaks had occurred in Italy. One was small and easily controlled. In the other over 800 cases occurred in a large city during a four-months period. No outbreaks have been reported from North-West Europe. In February, 1944, the civil public health group re-established an active malaria control programme in Southern and Central Italy which was expanded during the pre-malaria season.

The U.S. War Department announced in Washington on Oct. 4 that tetanus had been virtually eliminated in the American armed Forces as a result of compulsory immunization of all officers and men. Major-Gen. Norman T. Kirk, Surgeon-General of the Army, stated that no case of tetanus had been reported among completely vaccinated troops. There had been a handful of cases throughout the entire Army, but these occurred only when the immunization process had not been completed. Some men had developed tetanus before vaccination. The U.S. Navy, which also requires tetanus immunization, has had no cases of the disease among sailors or marines wounded in battle up to Sept. 15, 1944, according to the Navy Bureau of Medicine and Surgery.

Brig.-Gen. R. W. Bliss, Assistant Surgeon-General of the U.S. Army, who recently returned to Washington from a tour of inspection through the Pacific war theatre, said that during the entire trip he did not see one mosquito or fly. "When we first took over the Pacific Islands there were clouds of insects everywhere, actually making it difficult to see. To-day, if we locate one mosquito we consider it comparable to finding a four-leaf clover. To me, that's the outstanding achievement of medical science in this war. There were no malaria mosquitoes on Saipan, but there was a type that carried dengue, which is as disabling as malaria itself. At first we had a great many cases of dengue. But after a few weeks of insect control, dengue practically disappeared. Medical sanitary companies divided the islands into a square like a chequer-board, and drained and filled swamp areas constantly. The amazing D.D.T. insecticide which did such a wonderful job in controlling typhus in Naples was sprayed by hand and by planes. These planes were rigged up with special apparatus. They flew back and forth across a given area much like a man mowing a lawn."

Correspondence

R.M.B.F. Christmas Gifts

Sir,—Once again it is my privilege to appeal to your readers throughout the country to remember the beneficiaries of the Royal Medical Benevolent Fund during this coming Christmas. These beneficiaries are aged or infirm medical practitioners, their widows and dependants, and as an old man myself—now in my 100th year—I have their welfare much at heart. It has been my custom for many years to appeal for Christmas gifts on their behalf, and a large sum must be raised if we are to give £3 to each, as we would like to do, and as we succeeded in doing last year.

If my colleagues could read the warm expressions of gratitude which are received each year they would feel that their contributions have been well spent, and I am confident that they will respond again as in other years. Donations, large or small, should be sent to the Honorary Treasurer, Royal Medical Benevolent Fund, 1, Balliol House, Manor Fields, Putney, London, S.W.15, marked "Christmas Gifts."—I am, etc.,

Thos. Barlow,
President.

War Surgery : Thoughts and Facts

Sir,—Gen. Mitchiner's thoughts on four years of war surgery (*Journal*, July 8) are stimulating and provocative. Generalizations and impressions are valuable when backed with the authority and experience that Gen. Mitchiner possesses. It is because we held his opinion in such regard that there is a danger that the opinion may be accepted in place of a review of the facts. A knowledge of the results of treatment of flesh wounds in the Italian Theatre of War does not support Gen. Mitchiner's view that little progress has been made in the prevention and control of sepsis. The surgical set-up in this theatre provides early primary surgery by surgeons experienced in wound débridement and decompression, swift evacuation to general hospitals, and delayed primary suture about the fifth day. Records kept at three hospitals in the early stages of this method of treatment were:

Surgeon A—252 wounds, primary union in 240.
Surgeon B—228 wounds, primary union in 186.
Surgeon C—195 wounds, primary union in 181.

These were consecutive cases whose only selection in three different surgical divisions was that there should be a sufficiency of skin for suture. The wounds were of all kinds, from large penetrating ones with deep muscle destruction to superficial tangential wounds. In the result, primary union was obtained in 607 wounds out of 675 (90%), and the average time from wounding to return to duty of cases without other lesions was 35 days. Treated by closed-plaster, etc., large numbers of these men would have become long-term cases for U.K., or Category E.

These figures are merely the results of a few weeks' work in three hospitals, but the same procedure is taking place generally in this Theatre of War. I am permitted by Gen. Hartgill, D.M.S., A.F.H.Q., and Brig. Edwards, Consulting Surgeon, A.F.H.Q., to mention that in the Cassino battle, May 11 to 31, 1,032 wounds were sutured by this technique. The closed-plaster method, far from being accepted (as Gen. Mitchiner claims) as "the best treatment for all types of wounds in the field subsequent on excision," is not employed except for the rare case where, for exceptional reasons, repair by suture or early graft is impossible. This method of wound treatment has truly resulted in prevention and control of sepsis, and represents an advance in surgical thought and technique of considerable value to the wounded man and to the Army.

How much of this advance is due to surgery and how much to the use of penicillin as well is not yet estimated. There is no doubt that penicillin has made possible repair of infected wounds that formerly would have been thought dangerous to touch. But closure of an infected wound is the only surgical principle that penicillin has revised. Gen. Mitchiner's suggestion that "penicillin works best in a puddle of pus" and that drainage of pus will therefore be avoided is a dangerous one. A puddle of pus, whether Gram-negative or Gram-positive, remains what such a puddle has always been when shut up within the tissues—a source of trouble. From a personal series of over 500 wound sutures in which penicillin was used locally, I could quote several instances where a collection of Gram-negative pus in the depths of a wound led to partial breakdown of the suture line. In wound repair with local use of penicillin pus must be drained, and I am careful to point out to surgeons the importance of siting the penicillin tubes in a sutured wound so that any pus can be aspirated twice daily as a preliminary to further instillation of penicillin solution. Alternatively, if the wound is grossly infected at the time of repair, a rubber-dam drain is provided. It is important that this principle should be followed if local penicillin therapy is not to be discredited.

I hope that Gen. Mitchiner will not think that these statements deserve his description of "self-congratulatory coma." They are not only thoughts on war surgery; they are also facts. —I am, etc.,

F. H. Bentley, Lieut.-Col., R.A.M.C.,
O.C. Penicillin Control Team, C.M.F.

Lung Complications after Operation

Sir,—It surprises me that some writers on pulmonary complications following abdominal operations make no reference to the valuable papers of Messrs. Band and Hall published in the *British Journal of Surgery* (1931-2, **19**, 387). There it is pointed out that after operations on the upper abdomen the diaphragm is kept relatively immobile (physiologically) to keep the damaged part at rest, and that movement of the bases of the lungs then depends on free movement of the lower part of the thorax. If these are restrained by a firm bandage stasis must be produced. This is but a trifling reference to a paper which should be carefully read and taken to heart by all abdominal surgeons. The diaphragm alone can do the necessary rhythmic pressure on the bases or the lower ribs. Paralyse both, and stasis is inevitable.

It will be well recognized by surgeons that after a radical mastectomy the firmest bandage can be applied to the lower thorax without any chest complication. Here the diaphragm does the work. Since having the privilege of hearing in Edinburgh a first-hand description of Messrs. Band and Hall's experiments and conclusions, about the time the work was published, I have attached the greatest importance to this freedom of the lower chest after any abdominal operation. One of the ward sisters at Addenbrooke's Hospital devised a bandage which has proved most serviceable. The important point is that the top of the bandage should not ride above the level of the lowest ribs, and the under-straps should be broad and efficient. To ensure that the upper part of the incision is not exposed a piece of strapping is passed from the upper part of the bandage to the sternum to keep the dressing in place. The many-tail bandage may be a serious menace to the free movement of the ribs, especially if it rides up owing to faulty under-straps.

An interesting demonstration of the risks attending the slipping up of a many-tail was seen a short time ago. After an upper abdomen operation in the morning, when visiting the ward in the evening and inquiring about the patient, I was told that all was well. Looking at the chart I found that respirations were registered as 30. This necessitated an examination of the patient. A many-tail bandage without under-straps was found riding up and so firmly holding the lower ribs. One of the special bandages was applied, so freeing the ribs, and the patient asked to take deep breaths. Next morning the breathing was about 20. Left alone, it is almost certain that some atelectasis would have followed.

In conclusion, I appeal to all interested in this matter to study the admirable piece of work mentioned above, which was carried out in the surgical research department of the University of Edinburgh.—I am, etc.,

Cambridge. W. H. Bowen.

Débridement

Sir,—Sir Harold Scott's letter in your issue of Oct. 14 again raises the question of what exactly is meant by the term "débridement." Is not the position that the French term "épluchage" corresponds to our term "excision," and means a thorough excision of all dead or damaged tissue in the

wound area. The term "débridement" corresponds with our term "revision" (= to examine with a view to correction), and means examination, the removal of all frankly dead tissue and foreign bodies, and the establishment of adequate drainage. The former is perhaps more often talked about than practised, but it is well to realize that the two procedures are quite distinct, and that unless the terms used to describe them are kept within their meaning considerable misunderstanding is inevitable.—I am, etc.,

London, W.1. E. G. Slesinger.

*** According to Harrap's French Dictionary *débridement* means: "*surg.* incision, slitting up (adhesion, etc.)"; and *épluchage*, "cleaning," "picking," "weeding," "thinning out," or, in familiar language, "hypercritical examination."—Ed., *B.M.J.*

Calcinosis Universalis

Sir,—I am much interested in your excellent medical "brains-trust" note under the above heading (Oct. 14, p. 519), but as I have had chance opportunities of studying the subject perhaps you will permit me to make a few remarks which I think are not merely of academic interest.

The case of the child aged 6 is almost exactly similar to that of a little girl aged 7 years which I demonstrated at the 17th International Congress of Medicine (London, Aug. 8, 1913, Part 2, 179); I would prefer the term "subcutaneous calcinosis" or "multiple calcification in the subcutaneous tissue," as there is no proof that any other parts are involved. Radiographs in my case proved that the areas of calcification were already diminishing in July, 1913, but unfortunately the child left England soon afterwards. Improvement has been shown in other children (Kennedy, Craig and Lyall, Sheldon). Such improvement has been observed under various treatments, or without any special treatment, and I am inclined to think that calcinosis of this type in children (mostly girls) is spontaneously likely to come to a standstill, or regress, under normal diet. The former danger from septic complications is, I suppose, greatly diminished by the use of chemotherapeutic drugs if required.

Surely myositis ossificans idiopathica is a progressive disease which nothing can stop, and, though it may be aggravated by trauma, is sharply to be distinguished from traumatic localized myositis ossificans and from subcutaneous or universal calcinosis in children. I have never seen or heard of the latter disease being associated with myositis ossificans. It has been suggested, with some degree of plausibility, that calcinosis of the multiple subcutaneous or universal type is a "storage disease" comparable to the now fairly well recognized "glycogen storage disease," which may apparently come to a standstill, or regress, as the affected children grow up.—I am, etc.,

London, W.1. F. Parkes Weber.

"Skiagram"

Sir,—Has not the time come when an effort should be made—and internationally—for a standard term to be used for the photogram produced by *x* rays? To some this would appear to be long overdue, and it would redound to the credit of the English-speaking peoples if they were the nations to bring this about.

At the present time—1944—there are no fewer than nineteen words which have been used in connexion with "a negative produced upon a film sensitive to the action of *x* rays." Chronologically they may be tabled thus:

1. *X* ray
2. *X* rays
3. *X*-ray picture
4. *X*-ray photograph
5. *X*-ray plate
6. *X*-ray film
7. Röntgen photograph
8. Roentgenogram
9. Actinograph
10. Actinogram
11. Radiograph
12. Radiogram
13. Sciagraph
14. Sciagram
15. Shadowgraph
16. Shadowgram
17. Skiogram
18. Skiagraph
19. Skiagram

Much confusion and uncertainty are caused by such a variety of terms. Some very absurd expressions are still in common use, such as, "Take an *x* ray of this fractured bone"; "Has a radiogram been made?" and so on. In reviewing what should be considered as the best—and international—word, it may be said that two terms stand out—namely, skiagram and *x*-ray film. Of these two almost certainly the first—skiagram—would appear to be the better. This word is etymologically sound, for its origin is from two Greek words, "skia" a shadow, and "gramma" writing. The following are the cogent reasons for its use from now onwards as the only word to designate the results upon a film sensitive to the action of *x* rays:

(*a*) It applies a "shadow writing," which is a negative produced by *x* rays.

(*b*) It has never been used for any other purpose, nor is it likely to be used, if it were to become "standardized" and that internationally.

(*c*) It has a distinctly "scientific sound" about it, and has for years now been used "scientifically."

(*d*) Once standardized, it would become used in all scientific text-books, in reports upon patients, in courts of law, etc.

The following are possible reasons for not using the term "*x*-ray film": (*a*) It is somewhat cumbersome. (*b*) The term *x* ray thus applied is unscientific. (*c*) The term "film" is used in several senses: (1) a sensitized material upon which a negative is produced; (2) a common term for a "movie" or "stop-film" strip, upon which prints have been produced for exhibition; (3) a "moisture on glass," a "haze," and a "thin membrane."—I am, etc.,

London, W.1. W. McAdam Eccles.

Mass Radiography

Sir,—The memorandum from the Ministry of Health on mass radiography published in the *Journal* (Sept. 9, p. 350) admits the present failure of the scheme, which I have forecast from time to time in your columns and elsewhere. The communication states that difficulties "have made it impossible rapidly to develop schemes for the general use of mass radiography throughout the country," and it is claimed that wartime production and lack of skilled professional staff are the chief obstacles. As to the difficulties of equipment manufacture much of this could be overcome if all *x*-ray manufacturers in the country were invited to co-operate instead of confining the production mainly to one firm. Concerning technical operators they can be trained very quickly for this type of work, and as all facilities for training radiographers for general *x*-ray work are booked fully until 1946 in London, surely some of these who have been disappointed, along with others willing to train, might be invited to take up mass radiography.

Nevertheless these two official reasons put forward to account for the present failure are minor issues, and, to my mind, the real cause for the present setback is inadequate organization. The existing units are not worked to capacity, being grossly understaffed. Instead of creating a large number of units to carry out a small number of examinations, because of the limited number of personnel attached to each unit (which is the present working of the scheme), the present technical staff should be doubled or even trebled, and then operate the personnel in shifts or relays so that the standard of work is maintained; the number of cases examined per unit would then more approach or even pass the figures claimed by Continental workers of 3,000 or more cases a day. The British units appear to be only capable of examining fewer than this figure per week. To safeguard the life of the *x*-ray tubes batteries of tubes should be employed, bringing a new tube into operation after, say, 500 exposures. The work could be done even with the plants now available, but it is essentially a question of organization, and medical men are reputed to be bad organizers.

Dr. Leggett (Sept. 30, p. 450) observes that the Ministry shows a desire to retain mass radiography in their own hands to the exclusion of all others, and pertinently inquires if the method they selected is the best, and, unless it is, he thinks that workers using alternative methods should not be excluded. One should take a broad view of this ruling (though it has no support in law), and I think most of us have been prepared to accede to the wishes of the Ministry in order to give the official plan every chance to succeed and maintain a uniform standard of work. For my part I have with much misgiving fallen in with the decision of the committee of the British Red Cross concerned to discontinue the services of their mobile portable motor mass radiographic unit in order to meet the

wishes of the Ministry. Other units, also outside the scheme, have vountarily ceased functioning; but if the Ministry and local authorities continue to display lack of organization and drive the matter may reappear for review elsewhere than in your columns, and I have in mind the uneasiness already noted by some of the business heads of firms that have had experience of the existing facilities.

A responsible head of a large modern manufacturing firm whose employees have been examined by one of these local authority units draws attention to a number of fresh aspects which Whitehall may or may not already appreciate but do not seem to have fully incorporated in their scheme to date, and I cannot do better than quote freely from a letter I have received from this firm:

"My difficulty is to see the value of one single *x*-ray survey of all workers in one factory unless there is some definite policy of following this up at intervals of, say, a year or two years. A very small proportion of cases of early tuberculosis are discovered, and the cost of this discovery is very high. A staff to operate the *x*-ray machine is required, and there is a certain amount of time taken up by the medical officer who interprets the films. The time lost in the factory and the administrative cost of the arrangements possibly amount to £500 or £600. No one in industry would grudge this in the very slightest degree, but I think it is fair enough that the management should inquire as to whether the means justify the end, and whether or not, if it was going to cost £500 or £600 each time, a better and more effective arrangement could not be reached. I am not reactionary about the value of mass radiography, but I feel that the factory unit is by no means the best way of applying it, although it happens to be a convenient one. It would be of much more value if you could *x*-ray all individuals in a given area of, say, 2 or 3 square miles, and even then surely it has only got value provided there is some continuity and it will be repeated at given intervals. Short of mass radiography that is applied to whole groups of individuals, I think it would be of considerable value if apparatus existed in certain areas where general practitioners or factory medical officers could send every case for *x*-ray examination that gave the slightest suggestion of the possibility of early tuberculosis. I think the ideal of the application of mass chest radiography is something for the perhaps distant future, and that in the meantime it would be very much better if those concerned with it were to give attention to a realistic and practical application of the very valuable facilities. From the point of view of industry I want to make clear a point that some speakers and writers on the subject have not perhaps fully appreciated. Industrial medical services are not primarily looked upon by the managements as something that should pay dividends or save the company money, and I am certain that if the case for mass radiography as a valuable social service were fully made out industry would co-operate. There is an indirect value in offering medical service to a staff in general morale. Although I have mentioned the cost of one survey by mass radiography, most industries would, I think, be willing to spend considerably more than this if the case were well made out for the advantage of the staff generally. I feel that at the present time, in the absence of any follow-up policy, the case is not a good one."

The manager of another firm informs me that he sent his employees in small batches to the local hospital, and thereby saved his firm many working hours and financial outlay.

It is clear that the present official scheme for mass radiography in this country requires speeding up, reorganized on the lines I have advocated from time to time, and above all it requires bolder direction and not necessarily from doctors, but perhaps with an efficient business head in control to organize it.—I am, etc.,

London, W.1. NORMAN P. HENDERSON.

Protein Hydrolysates in Infantile Diarrhoea and Vomiting

SIR,—I was most interested in the valuable and instructive contribution on infantile diarrhoea and vomiting (Sept. 30, p. 425) by Drs. Alexander and Eiser and your leading article on infantile gastro-enteritis appearing in the same issue. In the latter the suggestion was put forward that protein hydrolysates administered orally or intravenously seemed worthy of a trial in the treatment of gastro-enteritis.

Although the series of cases is not large and wartime conditions and the pressure of hospital work have prevented accurately controlled observation, a step has already been taken in this direction at the Southend General Hospital. Ever since casein hydrolysate was made available to us some fifteen months ago in a form suitable for intravenous or oral administration, we have made a practice of treating cases of diarrhoea and vomiting, whether due to gastro-enteritis or parenteral infection, by the oral administration of casein hydrolysate. This line of therapy was prompted by the desirability of maintaining an adequate calorie and particularly a sufficient protein-nitrogen intake, when diarrhoea and vomiting could be controlled only by withholding the more usual forms of nourishment and by restricting everything given by mouth—glucose saline, Hartmann's solution, or boiled water. On theoretical grounds the possibility of using a solution of casein hydrolysate and glucose appealed to us in that such a mixture, requiring no digestion, would be absorbed rapidly and completely from the upper reaches of the small intestine. It also seemed reasonable to suppose that a combination of glucose and pure amino acids would be unlikely, of itself, to perpetuate diarrhoea and vomiting due to parenteral infection or to cause an exacerbation of symptoms in gastro-enteritis.

The results of treatment were at first disappointing. It was soon discovered, however, that solutions of casein hydrolysate in a concentration of more than 2% were unsuitable, in that they caused gastric irritation and aggravated vomiting. The most satisfactory results have been obtained by employing a 1.25% solution of casein hydrolysate in 4.3% glucose. (The casein hydrolysate was supplied by the courtesy of Herts Pharmaceuticals Ltd., Welwyn Garden City.) This combination has been well tolerated by the majority of infants suffering from diarrhoea and vomiting, whether due to gastro-enteritis or parenteral infection. The most significant observations that I have been able to make in connexion with this treatment of such cases are as follows:

(1) In the majority of cases of gastro-enteritis in which dehydration has been absent, diarrhoea and vomiting have been controlled as effectively by casein hydrolysate–glucose solution given in the first 24 to 48 hours of treatment as they can be by the more usual practice of withholding all forms of nourishment during the same period. Thus an initial (and possibly indirectly harmful) period of starvation has been avoided, and the body provided with protein nitrogen to the extent of 2.2 g. per kilo. daily. (This figure is achieved by giving 2½ oz. per lb. body weight of the solution daily.)

(2) Although the total calorie intake is only a little greater than one-third of the body's requirements (18.7 as against 45 per lb.), infants have been maintained satisfactorily for periods up to 5 days, and diarrhoea and vomiting controlled without having to resort to parenteral fluid administration.

(3) In cases of diarrhoea and vomiting due to parenteral infection the method has been found invaluable in supplying the protein-nitrogen requirements during the period in which the site of infection was being sought and adequately treated.

(4) The premature resumption of milk feeds after an initial period of treatment with the casein hydrolysate mixture has frequently resulted in a recurrence of diarrhoea and vomiting. These symptoms have been controlled if casein hydrolysate is again substituted or if suitably diluted milk feeds alternate with those of casein hydrolysate.

(5) By supplying adequate fluid and protein requirements early in cases of gastro-enteritis and by controlling diarrhoea and vomiting without a preliminary period of starvation, dehydration has been frequently prevented, and the need for the administration of parenteral fluids rendered unnecessary thereby.

There is no doubt in my mind that the method of insuring an adequate protein-nitrogen intake described above is theoretically sound and efficient in practice provided it is used with discretion, and here a note of warning must be sounded: on no account should the method be used as a substitute for intravenous infusion when this is indicated. In other words, the treatment of severe dehydration, once established, is outside the scope of the treatment which I have described.

Although we began treating cases of gastro-enteritis and diarrhoea and vomiting with casein hydrolysate with a view to providing an adequate protein nitrogen intake during the initial stages of illness, it would appear from the observations of Alexander and Eiser that prevention of liver damage in gastro-enteritis is likely to prove the most important indication for this form of treatment. The best results will probably be achieved by intravenous infusion of casein hydrolysate or other suitable preparations of amino acids in all severe cases of gastro-enteritis.

It will be interesting to see the outcome of large-scale controlled experiment on gastro-enteritis treated by protein

hydrolysates. In the meantime I hope that these preliminary observations will act as a stimulus to further efforts in this field.—I am, etc.,

DAVID LEWES,
Medical Registrar, Southend General Hospital.

"Dissident Doctors"

SIR,—The Dr. Samuel Smith referred to in your annotation of Oct. 14 last is a member of the Socialist Medical Association but not of its council or executive. He is also, I understand, a member of the B.M.A. From the S.M.A. point of view he was exercising his democratic rights as an individual member in sending to his friends and acquaintances the duplicated memorandum referred to.

Statements of S.M.A. policy are made openly from the official address.

Prophets are indeed without honour in their own country, for you, Sir, have seen Dr. Smith's memorandum, whereas I had not even heard of its existence till I read my *B.M.J.*—I am, etc.,

SOMERVILLE HASTINGS,
President, Socialist Medical Association.

SIR,—It would, no doubt, be difficult to say how far your warning in the *Journal* of Oct. 14 against the introduction of doctrinaire politics into medicine should be directed against the profession as a whole. One fact, however, does require to be emphasized: that there never was a time when the need for a rational and scientific attitude to political problems was greater than it is at the present day. There should be no question that a body of intelligent men and women engaged in applying the scientific method in the professional half of their lives are not justified in relapsing, in the other half, into an infrascientific state of mind when social and political issues are under discussion.

It is over 50 years since Karl Pearson pointed out in *The Grammar of Science* that the scientific method was applicable in the social as well as the physical sphere, that one of the aims of this method is to enable judgments to be formed independent of the idiosyncrasies of the individual, and that the scientific habit of mind is an essential for good citizenship. Your esteemed contemporary (*Lancet*, 1944, **1**, 571) aptly summed up the situation a short time ago in stating that the scientific method was the only possible basis for an ordered life, individual or national. No demonstration is required to indicate the strong position the profession would be in if it could claim, and show, that its judgments on the present important medical-political problems were based on an objective and scientific consideration of the data.—I am, etc.,

London, W.1. FREDERICK DILLON.

SIR,—I have been reading your annotation in the *B.M.J.* on the subject of dissident doctors. As I see it, the meaning of the article is, apart from personalities, "Socialist doctors are entitled to join the B.M.A., but should maintain a decent silence about their political opinions." Believing, as we do, that the White Paper is, in the main, in the interests of the health workers and the people, we naturally support it. But it is only a beginning. We believe with our splendid Archbishops in equality of opportunity for all, we believe in the abolition of poverty. We believe that Socialism is the most potent factor in the prevention of war. Is it likely, Sir, that when we have this gospel to proclaim we should be silent? Rather with almost religious fervour, in season and out of season, by any legitimate means, we shall seek to further our views, believing in the rightness of our cause, and following the glorious example of the U.S.S.R.—I am, etc.,

London, N.16. D. S. BRYAN-BROWN.

SIR,—As a regular reader of the *B.M.J.*, if not an active member of the Association, may I be allowed to express an opinion about both the article "Dissident Doctors" and the doctor who appears to have incurred your vast displeasure. You state Dr. Smith is one of those members who whilst parading the fact they are members of the B.M.A. are not content to work within it in a democratic way. Surely your article is the very negation of democracy. Government by Parliament, local bodies, etc., consists of free expression of opinion, argument, and counter-argument, thus arriving at the best laws or solution in the matter *sub judice*. This certainly applies to the Government's White Paper, and I hold Dr. Smith has every right to voice his views not only to the vociferous minority but to all medical men. We all have our own views and need not be proselytized.

I, too, am an East End doctor, and my views are diametrically opposed to his, being all in favour of "private enterprise" with the minimum of interference by the State, despite the many efforts of Dr. Smith to convert me. The medical profession are not sheep to be led.

As regards the remark "shortage of doctors, etc.," I would like to say Dr. Smith conducts a very large practice in a most efficient manner. It is only his boundless energy and philanthropy that make me ashamed.—I am, etc.,

London, E.3. E. O. MORPHY, M.B., D.P.H.

SIR,—It is high time that the ostrich-like attitude concerning the political functions of the medical profession displayed by your annotation in the *Journal* of Oct. 14 is challenged. Many doctors, even the B.M.A. Council themselves, have recently and repeatedly stressed the greater importance in the promotion and maintenance of health of such primary fundamentals as food and housing over secondary factors such as the provision of personal medical services. In doing so they indirectly admit the political functions of our profession, whose aim I assume is the betterment of human health. If it is believed that better town and country planning, housing, feeding, and education, at least two of which are dependent on the value of income relative to prices (rent and cost of food)—to say nothing of improved personal health and social security services by means of which the occurrence of sickness or accident will not cause financial loss to the sufferer and embarrassment of the above-mentioned income-price ratio—are necessary for the raising of the level of the nation's health, surely it is the business of members of the medical profession not only to proclaim these beliefs but also to take all possible steps to further their implementation. The scientific method of taking such steps is by utilizing the political machinery of the country, and the fact that a proportion (is it such a minor one?) of the profession is now waking up to this fact should be the occasion for rejoicing rather than moaning.

Some of us doctors consider ourselves citizens first and doctors second, and therefore owe our allegiance to the greater democracy, or to democracy before a possible technocracy. Therefore we feel that it is morally our duty to support whatever democratic political or medico-political organization we believe is most likely to press for the improvements we desire, and to put them into practice if elected to power. And, therefore, whether we join on the one hand Common Wealth or the Conservative Party or on the other hand the S.M.A., the M.P.A., the Sword of the Spirit, or the Child Health Planning Group in addition to continuing our membership of the B.M.A., I maintain that the B.M.A.'s *Journal* in attacking the activities of two of the four organizations in the second group above is not only unjust but also blind.

The Churches have for centuries been more acutely aware than the medical profession of their political duties in their endeavours to influence public policy. The fact that such so-called "interference" has not always seemed either righteous or satisfactory in the light of history does not invalidate the underlying general moral principle. Members of the medical profession might well emulate their clerical colleagues, Nonconformist, and, more recently, also Church of England, in standing more frequently for membership of their local authorities, bodies which doctors often criticize and blame without being prepared to take the obvious step of standing for election themselves, and, if successful, endeavouring to reform or guide the authority from within, a process in which hitherto the medical officer of health has usually been engaged in a lone struggle. This leads to the final observation that in a properly organized national health service the doctor with his valuable working time economized by the provision of clerical and auxiliary medical personnel, should at last have

enough leisure to enable him to play his rightful part—one aspect of which I have just indicated above—in a democratic fellowship.—I am, etc.,

F. John Garratt Lishman.

Devon.

** We agree that medical men as citizens should utilize "the political machinery of the country" in order to play their part in "a democratic fellowship." But are the Socialist Medical Association and the Medical Policy Association parts of this machinery? The former, at least, wants the B.M.A. to attack the latter.—Ed., *B.M.J.*

Reserve of Medical Students

Sir,—I have been approached on several occasions by medical students whose reservations have been cancelled by the Ministry of Labour because they have failed in one examination in the medical course. The most onerous effect of this procedure is seen in cases where a student has failed in the second M.B. examination at a university but has passed the equivalent examination of the English Conjoint Board, and upon the latter achievement has been accepted for his clinical training at a London teaching hospital, and some months later—in one instance after the student had completed nine months' clinical training to the satisfaction of the hospital authorities—has been called up and forced to relinquish all prospects of qualification. The Minister in reply to myself (*Hansard*, July 29, 1943) described his procedure as follows:

"One of the conditions for the continued reservation of a medical student is that he shall be periodically certified by the responsible authority of the university or other training establishment as making satisfactory progress in his studies. This restriction is necessary not only for some general reasons but because the number of places for medical students is limited, and an unsatisfactory student is not only failing to qualify himself but is preventing someone else from doing so."

I submit, Sir, that this is putting too high a premium upon the result of one examination. There must be few of us who have not failed at some part of the very arduous preparation for the medical profession. I have repeatedly pointed out in such cases to Mr. Bevin that the consequence of his regulations is to withhold from qualification a number of candidates for the medical profession and thus invalidate the success of schemes for post-war reconstruction which depends so largely upon securing an adequate number of doctors to work them. The demand is likely to be at least three times as great as the present supply, and inasmuch as the minimal period for training a doctor is some six years, preparation for that demand should be put into operation now.—I am, etc.,

E. Graham-Little.

House of Commons.

The Hospital Case and the G.P.

Sir,—After reading Sir Adolphe Abrahams's stimulating letter on postgraduate study (Oct. 7, p. 480), may I offer a humble suggestion whereby some of the issues raised may be approached. A little closer co-operation between hospital consultant staff and G.P.s may result in more instructive handling of the clinical material which presents itself in the realms of one's own practice.

The G.P. sends his case to hospital either because he is unable to diagnose it or he needs special therapeutic facilities, or both. Having referred his case to hospital he usually loses trace of it for some weeks, after which time he may or may not receive a letter stating either the diagnosis arrived at by his superiors in the field or the treatment to be followed. Would it not be a great deal more instructive if the rationale followed in arriving at the diagnosis were also explained to the G.P.? May I give you just one illustration.

I referred a case recently to a well-known surgeon at a local hospital. An abdominal tumour was palpable (at least in my opinion, for what it may be worth). I have not heard one word from the hospital. The patient rang me up and said she was being admitted for investigation two days later and she has now been in hospital one week. I have taken the trouble to visit the hospital twice in an effort to follow up the case. I have gleaned from the sister of the ward that she has no information for me, "two stools have been done and come back negative," and that is all. The tentative diagnosis I made was "renal tumour and calculus." I am left wondering what possible connexion there may be between a renal tumour and a negative stool. No one has confirmed the palpable tumour or told me its possible identity.

Could not the gods of the profession occasionally step down from their pedestals to confer with, nay advise and teach, their subjects. I feel that were this possible the interesting cases which do present themselves to the G.P. would be made a great deal more instructive.—I am, etc.,

Kate Forrest.

Artificial Insemination

Sir,—The letter from Dr. Harper in your issue of Oct. 14 needs an answer. It would have been well had he verified and weighed his facts rather more carefully before blossoming into print about this very complex subject of artificial insemination. The following points must be made clear:

Artificial insemination is certainly never done without the full and willing consent of the barren husband at any clinic or in any case with which I have dealings, nor, I imagine, would it ever be by any bona-fide doctor in his senses. Artificial insemination from a donor is called for only in a very small group of barren marriages (perhaps 2% or less of all cases seen)—i.e., those in which the husband is completely and irremediably sterile and the wife fertile, where adoption is unacceptable because the wife desperately wants a baby of her own, and where, in consequence, the marriage may be in danger of breaking down. In such cases, with the full and written consent of the sterile husband, artificial insemination, carried out as a private arrangement between the couple and the doctor, may be the best possible solution, leaving the world at large to regard the child as the husband's. It is worth placing on record that most of the requests for artificial insemination come from the sterile husbands themselves, anxious to make such reparation as they can to their wives for the children they cannot beget. Moreover, in my experience the wives are of the type who do not seek the easy way out of finding a "fancy man." It seems possible that there will be a better and more rational selection of genes if the wife receives an artificial insemination from a semen donor on a carefully chosen panel than if in her chagrin and desperation she commits an impetuous act of adultery. In any case, if we are to concern ourselves with the quality of genes there are plenty to engage our attention in the community at large before we concentrate upon that rare bird the artificial donor. Adoption undoubtedly is the solution for some, but an adopted child carries no genes from its adopted parents, whereas a child conceived as the result of artificial insemination does at least carry them from one.

In building up a panel of semen donors it is best to choose married men with offspring and to talk to their wives first, and only if these are willing for their husbands to act as semen donors are the husbands themselves approached. It is also well to select only those couples who appear to be intelligent enough to comprehend the reason for the appeal. (In the case quoted by Dr. Harper my judgment must have been at fault.) A clean bill of health, a sound intelligence, and a high grade of fertility are all essential in a donor; wherefore the building up of such a panel is no easy matter and places a grave responsibility on the doctor who attempts it. In this help might well be given by such expert bodies as the Medical Research Council and the Eugenics Society.

The legal position with regard to artificial insemination from a donor has not yet been defined in this country. In America, where artificial insemination has been done for many years, it is an accepted part of legitimate medical practice in carefully selected cases; even there the legal position is still fluid. When Dr. Harper says that the matter requires full ventilation and direction from competent authorities we must all agree. It is noteworthy, however, that demand by the citizen for legal protection in this matter has not yet been voiced nor has organized religion committed itself.

One last point. If by "veterinary" Dr. Harper had meant scientific, which it is to be suspected he did *not*, it would have been a well-deserved compliment to the Cinderella of the professions.—I am, etc.,

Margaret Hadley Jackson.

Crediton, Devon.

Sir,—The rational view of the moral aspect of this problem would seem to follow from considering the normal and definite way in which procreation of children takes place. It is not a manipulative procedure by a third party, or an operative procedure, but proceeds by way of sexual intercourse between man and woman. To do without sexual congress is a perversion which should be morally condemned. It involves masturbation, which should be condemned also on other grounds. This disposes of the case where it is proposed to inseminate a woman with the semen of an unknown donor.

The only cases in which artificial insemination may morally be resorted to are those in which, although coitus takes place, there is no reasonable likelihood that the semen can penetrate the uterus—e.g., malformation of the cervix, ectopia vesicae successfully operated on so that semen is ejaculated into the husband's rectum. In such cases normal intercourse is not dispensed with. The procedure follows such coitus; it is not morally wrong though it may be difficult and unsuccessful.

The medico-legal aspects of the problem are not referred to by Dr. Richard Harper. They have been discussed in the *Journal* of Jan. 9, 1937.—I am, etc.

London, N.16. E. H. Strange.

Gestation Period and Ovulation Time

Sir,—The present abnormal circumstances, whereby thousands of couples are permitted occasional, and thus memorable, opportunities for cohabitation offers to medical men an unrivalled opportunity for collecting data on the above subject. Despite the many researches detailed in such works as *The Time of Ovulation in Women*, by C. G. Hartman (London, Baillière, Tindall and Cox, 1936), controversy still arises over the relatively simple matter of gestation time, while the more abstruse affair of ovulation time in relation to menstrual period is obscure in the extreme. I would like to suggest that practitioners consulted for the first time by pregnant women make a note of all who admit to pregnancy from single coitus and publish their findings on the resulting gestation periods. If women were encouraged to keep a calendar record of their menstrual history an estimate of the ovulation time in relation to the menstrual cycle could also be made with some accuracy, provided that a decision is arrived at on the question of survival time of spermatozoa in a fertile state in the female genital tract. This could be done by washing out inseminated monkeys and using the washings for artificial insemination of other female monkeys who are fit for impregnation. From such data an accurate estimate of the day of ovulation in the cycle can be made and thus a sounder basis be secured for opinions on the matter of the so-called "safe period."

Starling's Physiology (8th edition, Churchill, London, 1941) suggests a period of 280 or 281 days from conception to expulsion of the foetus, being a multiple of 10 menstrual cycles, while W. H. Howell (*Textbook of Physiology*, 14th edition, Saunders, Philadelphia, 1940) merely says 280 days after the last day of the last menstrual period, while some textbooks of obstetrics say 272 days from conception to parturition. Recent experience has led me to believe that a proportion of healthy women are producing normal infants with a gestation period of about 285 days on the average. With regard to the time of ovulation there might be said to be two schools of thought: those such as Knaus (1929), Bourne and Williams (1942), Pryde (1941), Shaw (1925), and Allen (1930), who are fairly dogmatic on the subject and venture a limited period of ovulation occurring from the 8th to the 17th day of the cycle; and those such as Siegel (1916), Hammond and Asdell (1926), Langman and Burr (1942), or Hamblen (1939), who are more vague. The following details of a case which can be vouched for illustrate some points in this theme:

A healthy 3-para aged 29 years gave birth to a mature child on Sept. 24, 1944, at 21.30 hrs., weight 8 lb. 11 oz., after 10-hrs. parturition. Single coitus took place on Dec. 13, 1943, at 05.00 hrs. Menstrual cycle for two years 26 days plus or minus 2, usually 26 days, flow 5½ days, L.M.P. Dec. 5 to 10, 1943. The period from insemination to delivery was thus 286 days 16½ hours, or, perhaps of more interest, the period from fertilization, when the embryo may begin to act upon the mother by production of diffusible agents, until the commencement of labour, when the maternal organism decides to expel the foetus, was about 285 days. This period resembles 11 menstrual cycles for this subject. If the survival time for viable sperm is a maximum of 48 hours, as suggested by Starling, then ovulation in this case occurred on or about the 10th day of the cycle.

In conclusion I should like to suggest that it is advisable to record data at the first interview and contain oneself in patience for the final result rather than record answers from tired and "hazy" women in the puerperium. Coitus dates can thus be checked with husbands before they forget their occasional leaves.—I am, etc.,

York. Jas. D. P. Graham, M.D.

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The Hazard of Anaesthesia

Sir,—May I make a belated contribution to the question of anaesthetic hazards. I doubt very much whether publication of our individual mistakes is really going to help others. It is difficult to learn from other people's errors, however willing we may be. There must be a stage in each doctor's career when he has to start with a great deal of theoretical knowledge and not much practical experience. I do not see how the young anaesthetist is to get experience except by practice, nor how the public is to be protected. It is certainly desirable that an inexperienced anaesthetist should choose his cases as far as possible, but no one can say precisely beforehand how any anaesthetic is going to shape.

My first essay at open ether ended in fatality. I was suddenly called upon to give an anaesthetic in a major abdominal section where the staff anaesthetist had failed to arrive. I knew nothing about the case; I had never given open ether. The house-surgeon in charge assured me that the patient was sound and he added that you could not possibly kill anyone with open ether. Yet I did—or the system which permitted such a happy-go-lucky arrangement. It did not salve my conscience that a famous pathologist found a degenerated heart muscle and several lesions in the lungs, or that the jury exonerated and even thanked us all. I knew that my inexperience plus a faulty system were to blame.

Later on in South Africa I built up a considerable anaesthetic practice, giving anaesthetics regularly for a well-known local surgeon, and my colleagues—both medical and nursing—paid me the compliment of calling on me to anaesthetize themselves, their wives, families, and relations as occasion arose, and I can therefore claim to have acquired some degree of skill. It may be that my early fatality helped me to a greater skill than I might otherwise have attained, and therefore benefited many other people. I should like to think so.

With regard to Dr. J. M. H. Hannan's letter (May 6, p. 630), I rarely give anaesthetics now, and am unfamiliar with all the more modern methods, but I agree with him about open ether. Though I lost my first case with it, it became my stand-by afterwards, and I would still back it, properly given, against any other anaesthetic with which I am familiar. I believe that the anaesthetist's armamentarium should be as simple as possible, and apart from that there are two essentials: slow induction and plenty of air. In big operations accompanied by much shock I used to add continuous subcutaneous saline. If a patient is taken under slowly, regardless of an impatient surgeon, and if he is kept a good colour throughout, he will give little trouble, and will have a minimum of vomiting and discomfort afterwards. It is the patient who is pushed under who becomes cyanosed, secretes plenty of saliva, strains his heart, and vomits afterwards. But you will never go far wrong with gradual induction and free airway. I still think my greatest triumph was putting a child under in its sleep without waking it up. I dislike anaesthetics for tonsils and adenoids above all other cases for the reasons that the child is frequently unhealthy, respiration is obstructed by the condition itself, and more so by the operative procedure. My nearest approach to another fatality was a T. and A. case

a private house, which I saved by adrenaline into the ventricle. I think the surgeon was even more relieved than I, as the parents were personal friends of his. Slow induction and plenty of air.—I am, etc.,

Nanyuki, Kenya Colony. G. Dunderdale.

Arsenic in Malaria

Sir,—Recent references in your columns to quinine and quinine substitutes in the treatment of malaria prompt me to suggest an alternative method that might be tried in cases resistant to such treatment.

It has been my experience that an intravenous injection of neo-kharsivan (0.45 g.) is invariably effective in terminating malaria artificially induced for the treatment of such conditions as general paralysis of the insane. One injection is sufficient and no relapses occur. Various (theoretical) contraindications to such arsenical treatment instantly suggest themselves. In my experience, however, no adverse effects occurred even in patients weakened by as many as fifteen to twenty rigors. Whether neo-kharsivan would be effective against strains other than *P. vivax* (the strain commonly employed in the treatment of general paralysis of the insane) cannot be said, but I suggest that arsenical treatment might be tried in cases of malaria, naturally acquired, which do not respond to quinine, etc.

I should add that the foregoing method of treatment is not an original suggestion. It was, I believe, first suggested by Dr. W. McAdam in the observation wards of the Southern General Hospital, Glasgow. As one of his successors, I can testify to its efficacy.—I am, etc.,

R. Good,
Capt., R.A.M.C.

Dermatitis in Coal-miners

Sir,—In his article in the *Journal* of Sept. 30 (p. 430) Dr. Knowles mentions constitutional factors as playing a part in connexion with the oncoming of dermatitis, but refrains from telling us exactly what he means by such a statement. He admits that only a small percentage of miners develop industrial dermatitis, so it ought not to be difficult to obtain more detailed information as to the peculiar "constitutional factor" which plays a determining part. I have pointed out that "miner's knee" is a form of rheumatism determined to some extent by kneeling, but only in those who belong to what I call the "acid class." This class is made up of those whose food contains too little of the lime-containing foodstuffs —milk, eggs—and too much of the acid condiments—vinegar, pickles, sauce—which tend to destroy the vitamins in the food to which they are added. In members of the "acid class" there is nearly always evidence of blood deterioration, which lessens their oxygen-carrying capacity, and if carbon monoxide be present in increased quantities such people have their susceptibilities intensified greatly, because the oxygen carried is still further reduced.

Dr. Knowles states that the highest percentages of cases of dermatitis occur in pit F, which is deep and hot, and where there is a higher percentage of carbon monoxide gas than in the other pits. Had the miners working in these pits dealt with by Dr. Knowles been examined before starting in a colliery, he would have been in a better position to assess the constitutional factor, and consequently to prevent disease.—I am, etc.,

Swansea. G. Arbour Stephens.

The Cat's Milk

Sir,—In the *Journal* of July 8 (p. 58) a letter by Dr. W. N. Leak once again raises a matter which to my mind is of paramount importance. A few days after reading it and heartily agreeing with him I received a letter from my wife describing a visit to a mutual friend who has just borne her first baby after a somewhat long and trying labour. I quote the following extract:

"'M' has not felt very thrilled or maternal, I gather, but that, I think, is the fault of the nursing home. She has never seen more of the baby than his face and his toes. She is not allowed to unwrap him at all. It might be anybody's baby brought in for her to feed, and there is no time allowed for mothering. 'X' [a casual acquaintance] saw him long before she did; she was mad about that. She wasn't allowed to see him till the evening, though she was perfectly well all the time. I thought she wasn't as well as she should be; too many visitors and pain with stitches. . . ."

Quoting such an account and observing individual mothers and infants under varying circumstances in a country practice, seeing the astonishingly plentiful evidence of successful breast-feeding in this country, where Nature takes her course in the most open-handed manner, may not have the value of controlled experiment. In some fields of work where an unknown number of factors are at work, I think that what *feels* right may at long last be "scientifically proved right," and I am certain that conditions described in the letter I quote do not feel right, whatever may be the causes of that state of affairs.

Air mails are precious and surface mail slow; if that were not the case Service M.O.s over-seas might write more often. Red tape exists and I do not know its full length, so I sign myself

"R.M.O., Italy."

Asylum Doctors' Pay

Sir,—Since the nursing and catering staffs of mental hospitals have under recent awards all received considerable increases in pay, is it not time that the medical officers should be considered?

A matron may receive £600, plus £200 emoluments; yet the average rate for a medical officer with a D.P.M. is £450 to £500 a year—frequently only £400. The scale which governs these deplorable rates is so antiquated that few even know of its existence. The continuance of this niggardly remuneration is not likely to increase the repute of a branch of medicine which in the past has not enjoyed the prestige it deserves.—I am, etc.,

"A.M.O."

Obituary

ARNOLD CHAPLIN, M.D., F.R.C.P.

We regret to announce the death on Oct. 18 of Dr. Arnold Chaplin, a learned physician who was for many years Harveian Librarian of the Royal College of Physicians of London.

Thomas Hancock Arnold Chaplin was born at Fulbourn, in Cambridgeshire, on Aug. 30, 1864, the youngest son of A. T. Chaplin, a member of a Puritan and Nonconformist family which has been resident in that neighbourhood for more than two and a half centuries and has always been engaged in the occupations of farming and allied trades. In the time of the great Civil War many members (ten) of the family played their part as troopers in Cromwell's Ironsides. Arnold Chaplin was educated at Tettenhall College near Wolverhampton, and then in 1883 went to St. John's College, Cambridge. In 1886 he took his B.A. in the Natural Sciences Tripos, and went on to St. Bartholomew's Hospital to complete his medical studies, graduating in medicine in 1889. At Cambridge he had also paid considerable attention to literature, especially history and biography. In 1892 he took the M.R.C.P., and in 1893 the M.D. of Cambridge, and in 1902 was elected a Fellow of the Royal College of Physicians.

In 1889 Dr. Chaplin was appointed house-physician to the City of London Hospital for Diseases of the Chest, Victoria Park, and at the end of the year resident medical officer. He occupied this post until 1892, and was then appointed registrar and pathologist. Having decided to make a specialty of the study of chest disease, he was elected assistant physician in 1893. He became full physician and in 1922 consulting physician, after serving the hospital for thirty-three years. From 1893 to 1904 he held the post of assistant physician to the East London Hospital for Children, and he was also physician in London to the Ventnor Consumption Hospital and physician to the Metropolitan Dispensary for twenty years. It had always been his wish to use what medical skill he might possess for the benefit of great commercial concerns. With this end in view he began practice in the City of London in 1892, and in 1898 was elected physician to the Marine and

General Life Office, a position he held for more than thirty-three years. He was medical adviser to many banks and commercial firms in the City, of which the National Bank of India, the Mercantile Bank of India, the Imperial Bank of Persia, and the P. & O. Banking Corporation may be mentioned. All of these positions he held for more than thirty years. He was also physician to the Standard Life Office in London for more than twenty years, and physician to the Chinese Imperial Customs for fifteen years. But while he held these appointments his main interest in the City was the important position of medical inspector to the P. & O. Company. To this office he was appointed in 1903, and he held it for thirty-five years. Besides being responsible for the medical control of this great company he was also medical inspector to the New Zealand Shipping Company and the British India Steam Navigation Company. While he held these shipping appointments many improvements calculated to make medical service at sea more efficient were put into operation. He was also medical adviser to the Chamber of Shipping, and on two occasions was chairman of the committee set up by the Board of Trade for the revision of drugs to be carried on board ship.

In 1918 Dr. Chaplin was appointed Harveian Librarian to the Royal College of Physicians. In 1917–18 he was FitzPatrick Lecturer in the history of medicine, and in 1922 delivered the Harveian Oration. For two years he served on the Council. He was a close student of English and French literature, especially that belonging to the seventeenth and eighteenth centuries. In fact the whole of his leisure may be said to have been spent in the study of literature. He was much interested in medical history and had been President of the History of Medicine Section at the Royal Society of Medicine. For many years he was a persistent collector of the engraved portraits of British medical men, and from this fine collection he gave 250 portraits to the Royal College of Physicians and 350 to the Medical Society of London. He was three times called upon to address the social gatherings at the Royal Society of Medicine, and twice chose as the subject of his discourse the engraved portraits of medical men, and on the remaining occasion great figures in the world's history. Another favourite study was the St. Helena period of the career of Napoleon while a prisoner there. During the later years of his life Dr. Chaplin acted as informal adviser to the Royal College of Obstetricians and Gynaecology on matters connected with the library.

Arnold Chaplin's literary output was select rather than large. In his younger days several papers on diseases of the heart and lungs were followed by co-operation with Sir Andrew Clark and W. J. Hadley in writing a monograph on *Fibroid Diseases of the Lungs, including Fibroid Phthisis*. Chaplin wrote jointly with E. H. Colbeck in 1902 a small book on the *Science and Art of Prescribing* to give the student and practitioner some knowledge of the principles that underlie the administration of drugs. So much prescribing was done by means of stock hospital formulae that such information was of importance, and the book met with a demand, for a second edition was issued in four years. In 1913 he wrote a full account of the final illness of Napoleon I. This was read as a paper before the Historical Section of the International Congress of Medicine in London and was published, with some additions, in the same year as *The Illness and Death of Napoleon Bonaparte*. Besides reviewing the published accounts of the various doctors in attendance at St. Helena, he considered the illnesses which the Emperor had been subject to and which were attributed to epilepsy. Napoleon had an habitually slow pulse—rarely above 50 when well—and the vomiting, lethargy, and stupor (almost unconsciousness) which he suffered from after unusual strain and effort were, Chaplin thought, quite possibly due to some passing form of heart-block. Some of his military failures were attributed to this weakness. The final illness, as revealed at the post-mortem, was diagnosed as gastric ulcer and cancer of the stomach; in life it had been put down to tropical abscess, to liver disease, and (two weeks before death) to hypochondriasis; no one suspected the stomach. The FitzPatrick Lectures, privately printed for the author, were on *Medicine in England during the Reign of George III*. They conveyed a good deal of general information about medical affairs over the sixty years of the history, 1760–1820: medical education, hospitals, public health, the medical press, progress of knowledge, with personal notes on many of the leading physicians and surgeons of the time. An interesting section is that on the Royal College of Physicians and the prolonged struggle between its licentiates and Fellows which lasted close on a century. The subject of the Harveian Oration was "Medicine in the Century before Harvey." It had as its thesis the comparative dearth of scientific endeavour before the date of his work and the stimulus scientific research received after its appearance. Interesting accounts are given of scholar-physicians before Harvey's time—Linacre, Caius, and others who created a spirit of wide culture in the College of Physicians—and of those who followed his precepts or original research in the period immediately succeeding the appearance of his book—Glisson, Wharton, Willis, and Grew. The Oration concluded with a tribute to Sydenham's subsequent work of stressing the importance of clinical investigation in the treatment of disease.

Arnold Chaplin joined the B.M.A. in 1910. He held office as vice-president of the History of Medicine Section at the Annual Meeting of 1927 and as president of that Section in 1936. He was a member of the International Medical Sea Code Committee, of the Ship Surgeons Postgraduate Training Committee, and of the Ship Surgeons Subcommittee.

R. J. ROWLETTE, M.D., F.R.C.P.I.

We have to announce with regret the death on Oct. 14 of Dr. R. J. Rowlette, a distinguished Dublin physician who represented Dublin University in Dail Eireann for four years and had been President of the Royal College of Physicians of Ireland and of the Royal Academy of Medicine in Ireland.

Robert James Rowlette was born on Oct. 16, 1873, second son of Matthew Rowlette, of Carn Cash, Sligo. He was educated at Sligo School and at Trinity College, Dublin, where he graduated B.A. as Senior Moderator in Ethics and Logic in 1895. He took the M.B., B.Ch., and B.A.O. degrees in 1898, proceeded M.D. a year later, and was elected F.R.C.P.I. in 1913. Early in his career he was pathologist at Queen's College, Galway. Among the positions he held in Dublin were those of King's Professor of Materia Medica and Pharmacy at Trinity College, physician to Mercer's Hospital and consulting physician to the Royal Hospital for Incurables, Donnybrook. During the last war he went to France with the rank of lieut.-col., R.A.M.C., and was mentioned in dispatches. He served on the Irish Public Health Council after returning to civil life and was professor of pharmacology at the Royal College of Surgeons in Ireland for five years. He was also a member of the Committee of Inquiry on National Health Insurance and the Public Medical Services.

Dr. Rowlette joined the B.M.A. in 1900 and represented his Division at two Annual Meetings; he was president of the Leinster Branch in 1922–4, and at the Annual Meeting in Dublin in 1933 presided over the Section of Pharmacology and Therapeutics. He was a past president of the Irish Medical Association and for many years acted as Irish editor of the *Medical Press and Circular*, whose history he wrote for its centenary in 1939; he also edited the *Journal of the Irish Free State Medical Union* and wrote memoirs of Irish physicians and surgeons for the *Dictionary of National Biography*.

From 1908 to 1920 he was president of the Irish Amateur Athletic Association and was always keenly interested in its work; he had been a famous athlete in his youth, and was honorary physician to the Irish Olympic teams that went to Antwerp in 1920, to Paris in 1924, and to Amsterdam in 1928.

Dr. Andrew Graham Ritchie, who died in Edinburgh on Oct. 12, was born in that city on Sept. 3, 1884, and from Edinburgh Academy went to study medicine at the Universities of Edinburgh and Berlin. He took the B.Sc.Ed. in 1907, the M.B., Ch.B. in 1910, and was elected F.R.C.P.Ed. in 1920. For several years after qualifying Dr. Ritchie held resident posts at the Edinburgh Royal Infirmary, and then became clinical tutor. He was also for a time resident surgeon at the Royal Maternity Hospital and physician to the Livingstone Dispensary; later he became physician to the Cowgate Dispensary and to the Longmore Hospital for Incurables. During the last war he served in No. 8 Mobile Laboratory, B.E.F., with the rank of captain, R.A.M.C. He contributed papers to the *Journal of Pathology and Bacteriology* and the *Quarterly Journal of Medicine*. He joined the B.M.A. in 1922 and represented his Division at the last two Annual Representative Meetings in London. A colleague, in the course of a tribute published in the *Scotsman*, has written: "Those who remember his father recognize how much Andrew Ritchie derived from him—in particular the strong, almost stern, sense of duty and the realization of the 'high calling' of his professional work. His experience as pathologist in the Army in the last war filled him with such love of the scientific side of medicine that at the end of the war he was much tempted to devote himself to it, but he saw it to be his duty to take over the large family practice with

which his father's increasing years were making him unable to cope. How well he succeeded in that vocation is attested by the devotion of his many patients."

Dr. Noel F. Rowstron of Sunderland, who died on Sept. 19, was born in Corunna, Spain, 74 years ago and educated at St. Bartholomew's Hospital, taking his M.B. degree at Durham University in 1893, and later his M.D., for which he was gold medallist. About 1899 he settled in Sunderland as a general practitioner. In the last war he served in Malta, and on his return was appointed V.D. medical officer in the Royal Infirmary, Sunderland, at which he practised to the day of his death. He was a member of the British Medical Association nearly all his professional career, and was founder of the West End Society—a subsidiary in the Sunderland Division of the B.M.A. A colleague writes: Since 1912 this society has drawn its members into close collaboration, improved their scientific knowledge, and ameliorated conditions of work. The members admired the enthusiasm of our friend both in his profession and in our society, and feel in debt to his untiring efforts.

Dr. Victor Jenner Batteson of Ilford, who died on Sept. 29, was for some years an active member of the B.M.A., representing the Stratford Division at nine Annual Meetings and serving as chairman of the Division in 1930–1; he had also been a vice-president of the Metropolitan Counties Branch. He was born in Mile End in 1867, the son of John Batteson, M.R.C.S. After seven years at University College School, London, he entered University College Hospital Medical School and qualified L.S.A. in 1894. During three years' service as temporary captain in the R.A.M.C. he held the post of sanitary officer at Malta. For a short time after returning to civil life he was assistant physician to the Queen's Hospital for Children, having served earlier as physician to the Plaistow Baby Clinic. Dr. Batteson gave much time to lecturing for the St. John Ambulance Association, which made him an honorary life member.

Dr. Charles Vincent Mackay, F.R.A.C.P., writes from South Yarra, Melbourne: In the obituary columns of the *Journal* of April 22 you published an appreciation of the late Sir Henry Maudsley by Sir Thomas Dunhill, his house-physician at the Royal Melbourne Hospital in 1904. The memory picture, which he has so clearly drawn of this great physician, teaching neurology at the bedside, will recall many such scenes to those who enjoyed the same privilege as himself. Sir Thomas is, however, not quite accurate in his dates. Sir Henry Maudsley was appointed directly to the in-patient staff of the Royal Melbourne Hospital on Aug. 27, 1903, and retired in 1919. Sir Richard Stawell was appointed to the out-patient staff on May 19, 1903. He actually preceded Sir Henry Maudsley on the teaching staff of the hospital, and succeeded him as in-patient physician on April 25, 1919. The praise which Sir Thomas Dunhill gives to these two great teachers of medicine is echoed back to him by all their students in Australia, who are so much indebted to them.

The Services

Major-Gen. R. E. Barnsley, M.C., K.H.S., late R.A.M.C., has been appointed C.B. (Military Division) in recognition of distinguished services in connexion with the landings in Normandy.

The *London Gazette* has announced the following appointments, awards, and mentions in recognition of gallant and distinguished services in Burma and on the Eastern Frontier of India:

C.B.E. (Military Division).—Col. (Temp.) A. N. T. Meneces, R.A.M.C.

M.B.E. (Military Division).—Capt. (Temp. Major) D. B. Jamie, R.A.M.C.; Capt. (Temp. Major) A. A. M. Nolan, I.A.M.C.; Capt. M. L. Sudan, I.A.M.C.

M.C.—Capt. K. B. Fraser, R.A.M.C.

Mentioned in Dispatches.—Majors (Temp. Lieut.-Cols.) T. E. A. Carr and P. D. Johnson; Capts. (Temp. Majors) T. S. R. Fisher and A. D. Stoker; Capt. A. G. H. Clay, R.A.M.C.; Capt. (Temp. Major) A. Lakshminarayanan; Capts. B. N. Blaggan, J. W. A. Crabtree, S. N. Basu, M. K. Akhtar, S. K. Ghosh, F. M. Khan, and U. P. Mukherjee, I.A.M.C.

Major-Gen. Sir P. S. Tomlinson, K.B.E., C.B., D.S.O., K.H.P., late R.A.M.C., has been mentioned in dispatches in recognition of gallant and distinguished services in the Middle East.

Capt. G. E. Wodehouse and Lieut. L. Dallain, R.C.A.M.C., have been awarded the M.C. in recognition of gallant and distinguished services in the field.

Capts. (Temp. Majors) J. G. B. De Vine, R. W. Jones, and J. L. Nicol, Capt. (acting Major) D. R. Sandison, Capts. T. G. Gray, P. G. Griffiths, C. C. Laird, W. W. Marsden, and J. Thompson, and Lieut. F. S. Cooper, R.A.M.C., have been awarded the M.C. in recognition of gallant and distinguished services in N.W. Europe.

Temp. Surg. Lieut. G. A. Gould, R.C.N.V.R., has been mentioned in dispatches for good services to the survivors when H.M.C.S. *Regina* was lost.

CASUALTIES IN THE MEDICAL SERVICES

Fl. Lieut. A. J. Chiappa-Sinclair, who died on Oct. 5, was born in April, 1898, studied dental surgery and medicine at Middlesex hospital, qualifying L.D.S. in 1919, and M.R.C.S., L.R.C.P. in 1922. After holding appointments at the Dental Hospital, Great Portland Street, he entered general practice. He was commissioned in the Medical Branch of the R.A.F.V.R. on June 13, 1941. At the date of his death he was serving as medical officer at a mobile field hospital over-seas.

Killed on active service.—Capt. Ernest Lawrence Holden Ellis, R.A.M.C.

Killed in action in N.W. Europe.—Capt. James Thorburn Doyle, R.A.M.C.

Died of wounds.—War Subs. Capt. Hayter Arnett Wells, R.A.M.C.

Previously reported missing, now officially presumed killed.—Surg. Cmdr. Humphrey de Bohun Kempthorne, R.N.

Reported missing at Arnhem.—Majors C. J. Longland and G. Rigby-Jones; and Capts. J. H. Keesey and J. E. Buck, R.A.M.C.

Reported missing.—Capt. R. E. Bonham-Carter, R.A.M.C.

Reported missing in Holland.—Capt. P. Louis, R.A.M.C.

Reported missing, believed prisoner of war.—Capt. C. C. M. James, R.A.M.C.

Missing in N.W. Europe, believed prisoner of war.—Lieut.-Col. M. E. M. Herford, M.B.E., M.C., R.A.M.C.

Wounded and missing in N.W. Europe, believed prisoner of war.—Capt. G. F. H. Drayson, R.A.M.C.

Wounded.—War Subs. Capts. N. R. Carlson and J. R. Kyles, R.A.M.C.

Medical Notes in Parliament

Tuberculosis Treatment

In the House of Commons on Oct. 10 Sir Waldron Smithers called attention to the increase of tuberculosis in Kent and the lack of institutional accommodation for patients. It was reported that there were at present 350 patients awaiting institutional treatment and, owing to the shortage of beds and staff, men could not be accommodated for at least three months and women and children for about five months. The incidence of tuberculosis went up in wartime. In reply to a question he had put to the Minister of Health on July 27, he was told that the rate per 1,000 went up from 0.704 in 1938 to 1.248 in 1941, 1.017 in 1942, and back to 0.984 in 1943. While realizing all the difficulties, had every possible step been taken to see that all available staff and accommodation were economically used? The Minister had tried to put as good a case as he could by saying that the number of deaths, which was considered the truest guide to the incidence of the disease, showed only an increase of 0.1% over the same period. It was not a question of the number of deaths but of the terrible danger of the spread of infection. The admission of patients was strictly in accordance with the date of recommendation. Why should that be? Surely some consideration should be given to the state of health, age, and home surroundings of the patient.

The conditions at the clinic at Bromley, to which, although it was not in his constituency, his constituents had to go, was appalling. There were no beds, and the accommodation for patients and the dressing-rooms was most primitive. The tuberculosis officer for that clinic, to whom he paid a tribute, was a splendid man and was heartbroken at the distress around him and his inability to help. The medical officer of health for Kent had written him (Sir Waldron Smithers): "You will appreciate that the doctor at the clinic at Bromley is an officer on my staff, but as tuberculosis officer to the Bromley area he is not familiar with the questions of policy raised. In any event, as a subordinate officer on my staff, it would be improper for him to answer your questions." Here was a foretaste of a State-run medical service, a service run too much by people sitting in offices and tending to get out of touch with the realities of medical practice. The medical officer of health also complained that he (Sir W. Smithers) had shown a report of his to the wife of a tuberculous patient in his constituency.

The war bogy had been overdone. Tuberculosis was bad all over the country. The Minister had a very grave responsibility in this matter in trying to alleviate human agony and suffering, which might have been avoided in some degree had he been a stronger man and shown some foresight and courage.

SIR HENRY MORRIS-JONES said that Sir Waldron Smithers's remarks on what was said by the chief medical officer about his subordinate officer was characteristic of what was likely to happen in this country when we got a National Health Service under the State. There was a medical man who, when asked his opinion, was not allowed by his superior officer to give it. The thing would have been quite impossible in a voluntary hospital. The position in regard to institutional vacancies and to tuberculosis cases which were compelled to be in homes that were often overcrowded was very serious in this country. Conditions in Wales were growing more serious. It was time that the Minister of Labour released generally more women for domestic and institutional help.

Miss HORSBRUGH said that they all realized what difficulties the hospitals were facing at the present time. Patients who would benefit most from sanatorium treatment and rest had to be taken before other cases which, although distressing, would receive no real lasting benefit from treatment. She agreed that they should have sufficient beds and institutional accommodation for both kinds of cases. Even in wartime they had practically the same number of beds as they had before the war, but that was not enough. The real difficulty was the question of staff—nursing and domestic. The pool of trained nurses had at present to be drained for service all over the world. They were asked for more midwives, more mental nurses, more staff for sanatoria, more general nurses. The Minister of Labour had set up a National Advisory Council for the Recruitment and Distribution of Nurses and Midwives. But it was just as important to see that they had enough domestic workers. They had asked the Minister of Labour to do more about this.

The death rate from tuberculosis was down practically to the figure for 1938—there was a small increase in the number affected, but nowadays they were discovering the disease earlier. They must have buildings, and above all trained men and women to look after these people. The Ministry of Health and the local authorities were doing their best, and there was an economic use of our facilities at present. The facilities were not great enough, and she hoped when the war ended they would be able to get on with a bigger and better health service, which would have the approval of the House of Commons and the country as a whole.

Inoculation in the Forces

On Oct. 17 Mr. A. EDWARDS asked the Secretary of State for War if he would consider making a King's Regulation prohibiting the vaccination or inoculation by force of any member of H.M. Forces, and the imposition of any punishment or disability on men who exercised their right to object to these operations. Sir JAMES GRIGG said that King's Regulations laid down that inoculation against tetanus and the enteric group of fevers was voluntary, and the *Manual of Military Law* stated that a soldier could not be punished for disobedience of an order to be vaccinated or for refusing to be inoculated. This was well understood, and he was not aware of any need for further regulations.

Parliamentary Medical Group and Medicine in India

During his visit to India last winter Prof. A. V. Hill had special opportunities of learning about the present situation and needs of India in connexion with education and research in medicine and public health. On his return he discussed these with the Parliamentary Medical Group, which was keenly interested in some of the proposals and took steps to facilitate a project for providing postgraduate training in the United Kingdom of selected Indian medical graduates. These would be key men for future developments. More recently two members of the Parliamentary Medical Group discussed these and kindred matters with Lieut.-Gen. J. B. Hance, D.G.I.M.S., and Dr. C. G. Pandit, director of the King Institute of Preventive Medicine, Madras. The Group is keenly aware of the urgent need of India for great improvements in the fields of medicine and public health. It hopes to keep in close touch with developments, and will do what it can to facilitate cooperation with and help from the U.K.

Penicillin

Answering questions on Oct. 19, Mr. WILLINK said no facilities had been granted to Mr. Kendall, M.P., to obtain penicillin. Mr. Willink had no information as to the source of his supplies. The value of penicillin for the treatment of bacterial endocarditis had not been established. In view of the limited amounts available for civilians he had not felt justified in recommending its use for this disease. He was not aware that civilians were being allowed to die because they were refused treatment with penicillin. For many diseases treatment by penicillin would be ineffective.

Mr. GEORGE GRIFFITHS asked whether Mr. Willink knew of a discovery in a laboratory of the West Riding County Council where penicillin was being made. Had not permission been given to use this on West Riding patients? Mr. WILLINK said questions on the production of penicillin were not for his Department. His responsibility was to advise on the distribution and use of what was available for civilians. There would shortly be a debate in the House on penicillin, during which he proposed to speak. Mr. KENDALL said larger quantities of this drug were now available.

Establishment of Married Women Doctors

Captain PRESCOTT on Oct. 19 asked the Minister of Health what disqualifications or disabilities attached to the establishment or promotion of married women doctors, either in the local government service or in the Ministry of Health, and whether he would consider recommending their removal. Mr. WILLINK replied that there was in all Government Departments a ban on the establishment of married women civil servants. This was removable in exceptional cases where it was considered that the efficiency of the Department would suffer by the loss of the officer's services. When a woman doctor in his Department was retained after marriage there was no disqualification as regards promotion. The abolition of the ban in the Ministry of Health was a general service question within the province of the Treasury. There was no statutory bar to the employment by local authorities of married women medical officers. The question was one entirely within the discretion of local authorities. A similar rule to that applied in the Civil Service was commonly applied in local government but had been widely relaxed during the war.

Anaesthetic Cylinders

Mr. WILLINK told Mr. George Strauss on Oct. 19 that his attention had been drawn to the recent death of a child in Bath during an operation as a result of the use of a badly marked nitrous oxide anaesthesia cylinder. The British Standards Institution had appointed a committee to consider what measures could be adopted to distinguish more readily than at present between the various medical gas cylinders used in the administration of anaesthetics for the purpose of avoiding the repetition of such a tragedy. His Department was represented on this committee.

Battle Casualties

From the opening of the campaign in Western Europe until the end of August the casualties sustained by the British Imperial Forces engaged totalled 103,842, of whom 20,795 were killed, 63,193 wounded, and 19,854 missing or taken prisoner.

Health of Miners

Replying to a debate on Oct. 18 about recruitment for the coal industry, Mr. TOM SMITH said the greatest wastage from the industry was through men who left it on medical certificates. That question was constantly under review. The fatal accident rate still showed a decline and progress had been made with rehabilitation in fracture cases. The rehabilitation centres were appreciated by patients who had been treated in them. Through the Home Office the Ministry of Fuel and Power had been able to do a little in regard to silicosis. No time had been lost in the efforts to prevent pneumoconiosis, which wanted watching constantly. Some progress had been made.

Goodenough Report.—The recommendations of the Goodenough Report, including the wider admission of women to the medical schools, are under consideration, and Mr. Willink hopes to be able to make a statement soon.

Proprietary Medicines.—Mr. JOHN DUGDALE on Oct. 19 asked the Minister of Health to inquire into all proprietary medicines claimed to cure certain diseases with a view to warning the public against those found not to act in accordance with their claims. Mr. WILLINK did not think that action on these lines would be practicable. It was already unlawful to advertise any article for the treatment of certain diseases, including cancer, diabetes, tuberculosis, and venereal diseases.

Serum for Rheumatoid Arthritis.—On Oct. 19 Cmdr. LOCKER-LAMPSON inquired whether particulars of the cure for rheumatoid arthritis announced in Russia had been secured. Mr. WILLINK said the Empire Rheumatism Council had carried out tests with a small supply of serum sent to them from Russia. The results obtained did not justify a favourable verdict. The council proposed to make further investigations when war conditions permitted, but meanwhile were not prepared to recommend the use of this serum.

No. 40

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended Oct. 7.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for: (a) England and Wales (London included). (b) London (administrative county). (c) Scotland. (d) Eire. (e) Northern Ireland.

Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for: (a) The 126 great towns in England and Wales (including London). (b) London (administrative county). (c) The 16 principal towns in Scotland. (d) The 13 principal towns in Eire. (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases; a blank space denotes disease not notifiable or no return available.

Disease	1944					1943 (Corresponding Week)				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Cerebrospinal fever	24	1	15	1	1	30	4	18	—	—
Deaths		1	1				—	1		
Diphtheria	509	7	144	116	23	732	37	167	93	44
Deaths	10	1	1	—	—	9	1	3	—	1
Dysentery	390	42	134	1	—	263	52	96	—	—
Deaths				—	—				—	—
Encephalitis lethargica, acute	1	—	—	—	—	1	—	2	—	—
Deaths		—					1			
Erysipelas			52	13	—			59	9	1
Deaths		—					—			
Infective enteritis or diarrhoea under 2 years				39					72	
Deaths	59	6	30	20	4	46	6	10	17	5
Measles*	2,492	38	173	54	57	581	55	52	18	4
Deaths	3	—	—	—	—	—	—	1	—	—
Ophthalmia neonatorum	58	3	11	—	—	70	3	19	1	2
Deaths										
Paratyphoid fever	7	—	1(B)	—	—	8	—	1	—	—
Deaths	1	—	—	—	—	—	—	—	—	—
Pneumonia, influenzal†	628	39	4	2	3	557	37	5	2	5
Deaths (from influenza)	19	3	2	—	1	14	1	2	—	—
Pneumonia, primary			173	15				177	19	
Deaths		21		7	6		20		14	13
Polio-encephalitis, acute	—	—				1	—			
Deaths		—					—			
Poliomyelitis, acute	19	—	11	2	—	15	—	2	2	—
Deaths		—					—			
Puerperal fever		1	13		—		4	14	—	1
Deaths							—			
Puerperal pyrexia‡	166	4	7	1	—	159	6	8	—	3
Deaths		—					—			
Relapsing fever	—	—			—	—	—			—
Deaths										
Scarlet fever	1,932	41	321	27	55	3,249	309	385	47	95
Deaths	—	—	1	—	—	1	—	—	—	—
Smallpox	—	—	—	—	—	—	—	—	—	—
Deaths				—	—				—	—
Typhoid fever	7	—	—	8	2	9	—	3	13	—
Deaths	—	—	—	1	—	—	—	—	—	—
Typhus fever	—	—	—	—	—	—	—	—	—	—
Deaths				—	—				—	—
Whooping-cough*	860	50	77	38	5	1,481	101	181	42	19
Deaths	6	—	2	1	1	11	2	3	1	1
Deaths (0–1 year)	320	31	81	44	20	273	35	45	35	24
Infant mortality rate (per 1,000 live births)										
Deaths (excluding still-births)	4,068	510	650	163	123	3,861	591	550	182	127
Annual death rate (per 1,000 persons living)			14·9	10·6	§			12·4	12·0	§
Live births	6,695	438	1,057	397	269	6,290	785	937	400	284
Annual rate per 1,000 persons living			21·5	25·7	§			19·1	26·3	§
Stillbirths	212	18	44			190	27	27		
Rate per 1,000 total births (including stillborn)			40							

* Measles and whooping-cough are not notifiable in Scotland, and the returns are therefore an approximation only.

† Includes primary form for England and Wales, London (administrative county), and Northern Ireland.

‡ Includes puerperal fever for England and Wales and Eire.

§ Owing to evacuation schemes and other movements of population, birth and death rates for Northern Ireland are no longer available.

EPIDEMIOLOGICAL NOTES

Discussion of Table

In *England and Wales* during the week measles, acute pneumonia, scarlet fever, and dysentery continued to rise in incidence, notifications being respectively 477, 149, 94, and 39 higher than last week. There were 122 fewer cases of whooping-cough and 36 fewer of diphtheria.

Whooping-cough notifications fell most noticeably in the south-west and south midlands from 190 to 101. Lancashire reported 18 fewer cases of diphtheria than last week. Measles notifications are still mounting in the north; Lancashire had 328 more cases than last week, Cheshire 71, and Warwickshire 55; in Durham the total fell by 137.

In *Scotland* there was a general lowering of the incidence of infectious diseases. The decreases were scarlet fever 51, acute primary pneumonia 43, measles 28, dysentery 11, diphtheria 15; but the total for whooping-cough rose by 22. The largest returns for dysentery were Glasgow 64, and Edinburgh 32.

In *Eire* diphtheria notifications rose by 26 and measles by 8. The chief outbreak of measles was in Dublin North Rural district, which had 23 cases.

In *Northern Ireland* measles notifications rose by 15, but those for diphtheria fell by 6, and for scarlet fever by 8. There has been an outbreak of typhoid fever, involving 11 persons, with 2 deaths, in the village of Lisbellan, Co. Fermanagh.

Dysentery

In England and Wales during the present year dysentery notifications have been high, the weekly totals ranging between 127 and 622. In the past five weeks 2,108 cases have been notified. The total notifications for the first, second, and third quarters of this year are 9,178, compared with 1,174, 3,665 1,368, 1,698, 4,487, 5,118, 5,453 for the corresponding periods of 1937–43. During the week reviewed the largest returns were Glamorganshire 54, Lancashire 52, Suffolk 43, London 42, Pembrokeshire 36, Essex 24, Northamptonshire 20, Surrey 18, Kent 11.

The age and sex distributions for the first quarter of the year are given in the recently published report for the June quarter. They are:

Ages	Civilians		Non-civilians	
	Male	Female	Male	Female
0–15	676	568		
15+	440	848	115	21
Unknown	30	48		
Total	1,146	1,464	115	21

Quarterly Returns for Eire

The birth rate during the June quarter was 23.6 per 1,000, which is 2.1 above the average of the five preceding second quarters. The infant mortality was 70 per 1,000 registered births—2 above the five-years average. The general death rate was 15.1 per 1,000, which is 0.5 above the average of the second quarters of 1939–43. 436 deaths were attributed to the principal epidemic diseases, compared with an average of 318. Increases over the June quarter of 1943 were as follows: measles 56; typhoid 6; diphtheria 5; there were 9 fewer cases of whooping-cough, 8 of scarlet fever, and 230 of diarrhoea and enteritis under 2 years than for the same period last year. The 222 deaths from the latter disease were, however, 63 above the five-years average. 871 deaths were due to respiratory tuberculosis, and 280 to other forms, the former being 107 below and the latter the same as in the corresponding quarter of last year.

Week Ending October 14

The returns of infectious diseases in England and Wales during the week included: scarlet fever 2,152, whooping-cough 897, diphtheria 567, measles 3,088, acute pneumonia 655, cerebrospinal fever 43, dysentery 358, paratyphoid 7, typhoid 9, poliomyelitis 24.

W. A. Blankenhorn (*Ann. intern. Med.*, 1944, **20**, 423) records six cases of multiple peripheral neuritis which occurred among 600 patients treated with sulphonamides. In 5 the total dose was 50 g. or more; 6 g. a day was administered by mouth. The largest dose was 197 g. and the smallest 36 g. In several cases other factors may have contributed. Eight cases showed signs of neuritis before sulphonamide drugs were given.

Universities and Colleges

ROYAL COLLEGE OF SURGEONS OF ENGLAND

Annual Meeting of Fellows and Members

The annual meeting of Fellows and Members will be held at the College on Thursday, Nov. 16, at 2.30 p.m. A good attendance is hoped for, because there will be important matters for consideration, such as the attitude of the profession to the White Paper, which was dealt with at the Fellows' meeting in May and reported on pages 14–17 of the annual report, copies of which may be had from the secretary of the College, Lincoln's Inn Fields, W.C.2, who will send also a copy of the agenda to any Fellow or Member applying for one. Other matters for discussion at the meeting are the implications of the report of the Goodenough Committee, and the attitude of the College in regard to the possibility of developing a conjoint building in which the three Royal Colleges and other academic bodies can be housed.

ROYAL COLLEGE OF SURGEONS OF EDINBURGH

At the annual meeting of the College held on Oct. 18 the following officers were re-elected for the ensuing year: *President*, Prof. R. W. Johnstone. *Viee-President*, Mr. J. W. Struthers. *Secretary and Treasurer*, Mr. K. Paterson Brown. *Representative on General Medical Council*, Mr. Henry Wade. *Convener of Museum Committee*, Mr. W. Quarry Wood. *Librarian*, Dr. Douglas Guthrie.

The following candidates were elected Fellows of the College, having passed the requisite examination:

H. H. Atkinson, P. H. Beales, H. M. MacCarthy, Mary Savory.

UNIVERSITY OF SHEFFIELD

At a meeting of the University Council held on Oct. 13 a donation of £100 for cancer research was received from Mr. George I. Forster of Northwood, Middlesex, in memory of his father and mother.

The following academic staff appointments were made: Dr. I. F. S. Mackay, as lecturer in experimental physiology; Dr. H. R. Vickers, as honorary lecturer in dermatology; and Dr. D. P. Greaves and Miss E. M. Spedding, M.B., as temporary demonstrators in anatomy.

Medical News

Dr. Janet M. Vaughan, F.R.C.P., has been appointed a member of the Royal Commission on Equal Pay for Men and Women in the Public Services, in Industry, and in Other Fields of Employment.

The Society of Apothecaries of London announces that Col. Elliott C. Cutler, chief consultant in surgery, U.S. Army, European Theatre of Operations, will deliver a lecture on "Military Surgery in 1944" at Apothecaries' Hall, Black Friars Lane, Queen Victoria Street, E.C., on Friday, Nov. 3, at 2.30 p.m. Members of the medical profession and senior students will be welcomed. Later in the session Brig. L. E. H. Whitby will lecture on blood transfusion; Sir Howard Florey on penicillin; and Mr. Eardley Holland, P.R.C.O.G., on midwifery.

At a meeting of the Society of Public Analysts and Other Analytical Chemists, to be held at 3 p.m. on Wednesday, Nov. 1, at the Chemical Society's Rooms, Burlington House, Piccadilly, W., the following papers will be presented and discussed: "Some Experiences of Microbiological Assays of Riboflavin, Nicotinic Acid and Other Nutrient Factors," by D. W. Kent-Jones, Ph.D., and M. Meiklejohn; "A New Method for the Estimation of Micro-quantities of Cyanide and Thiocyanate," by W. N. Aldridge. Guests introduced by members are welcomed at the meetings by the Council.

A Congress of Friendship and Co-operation with the U.S.S.R. will be held in London on Nov. 4 and 5, in the Central Hall, Westminster, and the Coliseum Theatre. The sponsors of the congress include Lord Horder, Sir Alfred Webb-Johnson, Sir Philip Manson-Bahr, Sir John Boyd Orr, Prof. F. Wood Jones, and Sir E. Rock Carling. The aim of the congress is to survey the successes already achieved in the field of British-Soviet co-operation within the framework of the United Nations, and to consider ways and means of further extending such co-operation in the post-war period.

The *Manchester Guardian* reports that a small quantity of D.D.T. (dichlordiphenyl trichlorethane), which has been produced to combat infestation by vermin, and was used with telling effect in Naples, has been placed at the disposal of the Salford Health Department for testing purposes, and will be applied to the disinfestation of houses. Salford is the only authority outside London to be issued with the powder, because war needs in the Middle and Far East make it impossible for quantities to be made available in this country.

Letters, Notes, and Answers

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B.M.A. Scottish Office: 7, Drumsheugh Gardens, Edinburgh.

ANY QUESTIONS?

Ammon. Chlor. for Soda-ash Burns

Q.—*Is the 5% solution of ammonium chloride issued to firms for treating burns caused by soda ash to be used neat or diluted?*

A.—If the bottle issued is labelled "5% solution" it should be used neat, to drench the affected tissues, and may be followed by bathing or irrigation with normal saline or plain water. (See *B.M.J.* 1943, **1**, 756.)

Sero-fibrinous Pleurisy

Q.—*What conditions in sero-fibrinous pleurisy would lead one to believe that the effusion is non-tuberculous?*

A.—All recent work tends to show that in the vast majority of instances sero-fibrinous pleurisy is tuberculous in origin. All cases of pleural effusion should be investigated thoroughly with a view to ascertaining the cause; a careful history, *x*-ray examination of the chest, and examination of the fluid are essential. Where there is no clear indication, such as the presence of a neoplasm, heart failure, acute rheumatism, or injury, to suggest that the condition is non-tuberculous, it should be assumed that tuberculosis is the cause. It must also be remembered that a persistent sterile effusion is a common sequel to pneumonia which has been treated with sulphonamides in inadequate doses.

Bed-sores

Q.—*An enfeebled lady of 82 years of age with myocardial degeneration and anginal symptoms was admitted to hospital with a fractured neck of femur and Colles's fracture, the result of a fall. Within four days she developed two pressure sores, one on the buttock and one over the scapula. Is this attributable to careless nursing as is so often thought to be the case by the public? The pressure areas had been treated in the usual manner, but in spite of this the abrasions appeared and progressed. Is this inevitable, and if not how can it be avoided? The question is one of supreme importance to hospitals nursing this type of case.*

A.—The occurrence of bed-sores in this case was by no means necessarily due to careless nursing. The measures taken to prevent such sores have each their special aim. The gentle rubbing during the process of cleansing with soap and water, the drying, and the powdering aim at improving the local blood supply; the application of spirit is meant to harden the skin so that it may the better withstand unavoidable pressure; the care taken to avoid rucks in the sheet and to distribute pressure by pads and rings aims at avoiding undue pressure or irritation on any one spot. In addition, if the heart action be weak it may be advisable to stimulate it by appropriate drugs.

In the lady of 82 with double fracture and suffering from myocardial degeneration it would be difficult to maintain a good peripheral circulation by any means and bed-sores might be inevitable. It must be understood, however, that in the great majority of cases, even at that advanced age, the above precautions should suffice to prevent the occurrence of sores.

Indoor Ripening of Tomatoes

Q.—*Is there any difference in the vitamin content of tomatoes that ripen on the bush and those that ripen indoors?*

A.—Very little information on this subject is available, although published results suggest that tomatoes which have been picked green and ripened in storage contain not only less vitamin C but also less carotene than similar fruit allowed to ripen on the vine. Conditions of storage have their effect, however, and it has been found that if unripe tomatoes are exposed to sunshine after picking their vitamin C content is much higher than that of tomatoes stored in the dark. Other factors, such as season, variety, and soil also influence the vitamin value of fruits, and consequently indoor-ripened tomatoes may or may not be nutritionally inferior.

Workmen's Compensation

Q.—What is the procedure for a patient without means who does not belong to a trade union to apply for compensation? My patient suffers from disseminated sclerosis which has apparently been aggravated by a fracture sustained at work, and he has only since then become unfit for work.

A.—The workman should go to the county court nearest to his workplace and explain the position to the registrar or his deputy. He will be instructed how to make a claim, and if the registrar considers that he should have legal aid he will be directed to the secretary of the local Poor Persons Committee of the Law Society. The registrar will probably himself communicate with the secretary. County courts are used to poor litigants, and their officials are humane and helpful. If the workman is physically unable to go to the registrar's office, any friend may go in his place. The local Poor Man's Lawyer might have something useful to suggest. The police, or the Citizen's Advice Bureau, or the local social welfare society, or the town hall staff, will almost certainly know whether a P.M.L. is available in the district.

Boy or Girl?

Q.—I have recently been approached by a patient who has read an article in a periodical about the predetermination of sex, and he now wishes to know whether there is any possibility of ensuring that a child of one sex should be born by taking the appropriate measures.

A.—Many fantastic theories have been advanced, but none of them are supported by evidence. The *p*H story continues to crop up at intervals, but it has no better support than other less probable hypotheses.

Motile Spermatozoa in the Vagina

Q.—I have been in the habit, when examining a couple for childlessness, of examining microscopically a vaginal smear for motile spermatozoa as soon as possible after intercourse. This examination should determine whether ejaculation occurs into the vagina and whether the spermatozoa are capable of remaining motile in the vaginal secretions. Surprisingly enough, however, I have seldom been able to detect active or even dead spermatozoa, although the male partner usually turns out to have no abnormality of the genitalia. Is this test a misleading one, and do spermatozoa in fact tend to disappear very soon from the vagina?

A.—The reaction of vaginal fluid is almost invariably acid; in a series of more than 400 electrical estimations of vaginal *p*H the range was 4.2 to 7.0 and was below 6.0 in more than 90% of cases. Sperms (even from a perfectly fertile man) that remain in the vagina are rapidly immobilized within 1 to 3 hours in most cases, though there are fairly wide variations from one couple to another, depending on such things as the volume and quality of the ejaculate, the volume and *p*H of the fluid present in the vagina prior to ejaculation, the occurrence of orgasm on the part of the female, and the phase in her menstrual cycle. Motile sperm have rarely been found in the vaginal vault up to 7 hours after intercourse (and once at an interval of 14 hours, and this vagina had a *p*H of 7.2), but unless the examination of vaginal contents is made within two hours of coitus little weight can be attached to the absence of motile sperm. On the other hand, with careful searching small numbers of immobilized sperm can frequently be found in vaginal fluid up to 24 hours after coitus—later than that they are only rarely found and then usually in a state of disintegration—e.g., tailless forms. Certainly a complete absence of sperm (motile or immotile) from a properly collected and examined sample of vaginal fluid obtained within 10 hours of coitus must cast grave doubts on the potency and/or fertility of the male. A more profitable and informative test, however, is the post-coital examination of adequate samples of mucus extracted from the cervical canal; in a satisfactory test it should be possible to find motile sperm in the cervix 40 hours or more after coitus during the second and third week of the cycle, whereas when the husband is inadequately fertile or impotent, or when the cervical mucus is hostile, motile sperms are not to be found even within a few hours of coitus.

The Injured Man's "Fag"

Q.—(1) Is nicotine volatile enough to disappear when a cigar or cigarette or pipe is lit? (2) If not, does it find its way into the lung? (3) Surely if that is the case a smoker must acquire some form of immunity? (4) Is it not likely that nicotine is drawn off when the tobacco is alight and that the ill effects of smoking are due to products of combustion (CO, CO_2, etc.)? (5) Should an injured man or woman be given his/her fag as treatment for shock? (6) Is it given as a sedative or stimulant, or both?

A.—The vapour of a cigarette, pipe, or cigar contains a considerable quantity of nicotine, which is absorbed through the mucous membrane of the upper respiratory tract and in the lungs. This causes a fall in pulse rate and skin temperature, and in excessive doses, nausea, vomiting, and diarrhoea. While a certain degree of tolerance to the inhaled nicotine is acquired after the first few trials this tolerance is never absolute, and toxic effects are inevitable if the dose is large enough. The untoward effects of smoking are adequately explained by this absorption of nicotine, but there is no reason to withhold a cigarette from an injured man. Nicotine is a central stimulant, but in small quantities is unlikely to have either a beneficial or a deleterious effect in traumatic shock.

A.T.S. for Minor Cuts

Q.—Are the three doses of 3 c.cm. A.T.S. recommended for air-raid casualties necessary for uncomplicated minor cuts due to glass? If the three doses are not considered necessary, is it worth while to give a second dose to lessen the chance of sensitization?

A.—Is antitoxin necessary? That depends on one's interpretation of "necessary." The conditions predisposing to tetanus are fairly clearly understood. The bacillus or its spores must be present, also a suitable material in which it can grow and develop its deadly toxin. A severe compound fracture with lacerated and necrosed muscle deprived partly or entirely of oxygen-carrying blood, and fouled with tilled manured soil, provides a dangerously high chance of tetanus. That patient should receive at once two or three times the ordinary prophylactic dose of 3,000 international units, repeated seven and fourteen days later. At the extreme other end of the scale of danger come trifling injuries. The sewing housewife who pricks her finger and the man who nicks his face while shaving are not in danger of tetanus, and no one gives antitoxin. Where in the scale do we place "minor uncomplicated cuts due to glass"? It is improbable that anyone has ever found tetanus spores on window-panes, and it is improbable that an "uncomplicated minor cut" would provide a nidus in which tetanus can grow. In private practice in pre-war days probably very few doctors would give antitoxin to such a patient. However, the opinion of the Ministry of Health is clear (*Monthly Bulletin*, Oct., 1943). "However trivial the wound may be" the doctor is to give 3 c.cm. and repeat it twice at weekly intervals. The doctor may feel that this practice leans towards over-insurance, and he may intensely dislike serum rashes; but when he complies he will feel that he has the weight of official responsibility behind him, and, after all, in the chaos of a raid he may have overlooked some other small but dangerous wound demanding antitoxin. If he makes certain that he is injecting modern enzyme-treated ("refined") antitoxin, he will reduce the risk of serum reaction to a minimum. The average immunologist would not in these circumstances give a second dose.

Cleaning the Glans

Q.—It would be helpful to know whether the foreskin should be retracted and the glans cleansed in (1) the child, (2) the adolescent, and (3) the adult after intercourse and at other times.

A.—The less attention drawn to a child's genitalia the better, and special cleansing is not usually necessary before puberty. After puberty, and still more in adult life, the foreskin should be withdrawn and the coronal sulcus cleansed whenever necessary. How often this will be required will depend on the amount of smegma and other sexual secretions produced.

Arcus Senilis

Q.—Is this a record—the arcus senilis practically disappearing? A year ago mine was very noticeable, quite a wide ring of yellow fatty deposit. Now nothing is left but a very narrow and grey ring.

A.—The arcus senilis, once definitely established, very rarely disappears. The distinctness with which an arcus is seen depends to some extent upon the colour of the iris which forms the background. Should the iris become lighter in shade, as sometimes happens, the arcus will be less noticeable.

Sterilizing Thermometers

Q.—What is the best way of sterilizing thermometers for taking temperatures by mouth in the surgery of a busy single-handed practitioner?

A.—A clinical thermometer placed in the mouth or rectum may be contaminated with pathogenic bacteria and convey infection to another patient unless disinfected. Phenolic disinfectants of various kinds are efficient for this purpose, but tend to dissolve the markings on the thermometer, thus making it difficult to read. The disinfectant most commonly used is spirit, and this is satisfactory if certain precautions are observed. The thermometer must be wiped clean after use, so that no mucus or other material remains adherent to it. It should then be placed in 70% spirit, this being the optimum concentration for bactericidal action: undiluted spirit is much less effective. Spirit in pocket cases should be renewed often enough to ensure that approximately this concentration is maintained. Harman, Girton, and Parker (*Public Health Nursing*, 1939, **31**, 23), who demonstrated the efficiency of this method by cultural tests, obtained somewhat better results when a few drops of liquid green soap were added to the spirit.

LETTERS, NOTES, ETC.

"Heel Reform"

Dr. PERCY TATCHELL writes: "She caught her heel in the carpet and fell." How often is that statement heard in the casualty department! On the stretcher lies an elderly woman, with a fairly obvious fracture of the neck of the femur, to judge by the position of the foot. Searching for the reason why people trip on carpets and fall downstairs, attention fixes on the sharp points at the sides of the heel, relics perhaps of days when we had to scramble up and down stony paths and really no longer essential under present conditions except for hill-climbing. Fig. 1 is an attempt to design an improved

A NON-TRIPPING HEEL

FIG. 1

form of heel. Gone are the points at the side, yet the vertical wall in front in the middle is retained as a safeguard against slipping. This heel has strong economic advantages too. Secured simply by six screws it could easily be replaced at home: also being twice as thick as the standard rubber heel, it should last a year, at a cost of about 10d. a pair. Contrast this with having to send shoes away every six months to have the heels rebuilt: generally a delay in execution of several weeks, and a bill of three or four shillings to pay.

RUBBER HEELS WILL TAKE THE CURVE OF THE WORN SURFACE

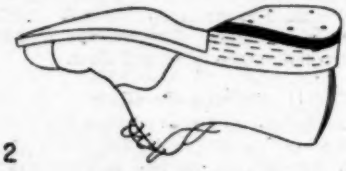

FIG 2

MAKING A COMFORTABLE WALKING SHOE

Fig. 2 suggests that the ordinary rubber heel sold in the cheap stores will take the curve of a worn leather heel, and give a reasonably finished appearance. To apply them they are first stuck on with rubber solution, and then nailed with the nails thoughtfully provided by the makers with each pair. To fix to the worn heel, after solutioning both surfaces, and when the solution is nearly dry, get the bend-up portion in position first, and secure with a brad or a small screw; afterwards press down the rest of the heel, drill out the holes, and knock the nails in with a punch. Finally, with a pocket knife pare away the angles in front, and so lessen the risk of tripping.

Ingrowing Toenail

Dr. EVA MCCALL (Sunninghill) writes: With reference to the answer in the *Journal* of Sept. 16 (p. 390), I have found powdered lead nitrate packed round the nail very effective. Vaseline or lanolin rubbed into and round the nail is also useful. Most important, too, is the choice of footgear. Shoes or boots made with a raised toe, to obviate pressure on the nail, are a great comfort.

Brandy as an Anaesthetic

Dr. R. K. BROOKS (Chipping Sodbury) writes: A fortnight ago I was in attendance on a multipara and successfully delivered her of a female child with the use of instruments. Before cutting the cord I noticed an unusually large stump continuous with a protruding umbilicus. On close examination this was not mere jelly but what appeared to me to be mesentery. Under the unusual anaesthetic of brandy Miss Betty Fox of the Bristol Royal Infirmary operated an hour later, and this child is alive to-day and should do well. The details of the findings at the operation and what was done have been supplied to me by Miss Fox. "The caecum, appendix, and some 8 in. of the terminal ileum was found to be protruding through the umbilicus along the side of the cord, and encased in a fine membrane and a coating of jelly. The umbilical ring was made slightly larger by a niche in the skin and the bowel returned to the abdomen; two purse-string catgut sutures were tied closely round the peritoneal margin of the umbilical opening, and a pressure dressing applied. The child was returned to its mother the following morning, and the umbilicus on inspection about a fortnight later was soundly healed." I write to inquire as a point of interest if there is on record an account of any such or similar operation being performed on a baby an hour and a half old and under the influence of brandy.

Injections for Osteo-arthritis

Dr. LEOPOLD MANDEL (London, W.1) writes: In your issue of Sept. 2 under "Any Questions?" (p. 326), your correspondent asked if procaine injected into the hip-joint in cases of intractable painful osteo-arthritis had met with any success. In the answer it was stated it had met with but short-lived success. I quite agree. I have also tried it combined with histamine; this also gives transient relief. More recently I have been using a solution of acid potassium phosphate, with the addition of a small amount of procaine, with quite striking results. Relief from pain is practically instantaneous and in several cases has lasted for 2 months while under observation.

Pest of Flies

Mr. J. COSSEY (Leatherhead, Surrey) writes: In the *Journal* of Aug. 26 you published a communication from Lieut.-Col. R. M. Barron in which he writes: "Breeding places outside houses should be searched for and, if found, dealt with." How this is to be done is not stated. However, he does give some useful hints for dealing with the flies themselves. Undoubtedly the remedy lies in destruction of, or in rendering the breeding places incapable of supporting larval growth. It may interest your readers to know that powdered borax or boric acid, if used correctly, are most satisfactory for dealing with fly-breeding places, such as garbage stands or similar areas. The borax or boric acid should be dusted lightly at intervals over the surface as the pile of refuse builds up, or they may be dissolved in water (3% solution) and the solution sprinkled. About 5 lb. of borax or boric acid per ton of garbage or manure is considered sufficient. These recommendations come from the Vermont University Agricultural Experimental Station, U.S.A., where investigations were carried out in 1942, the report being published in the *Journal of the American Society of Agronomy*, September, 1943, which should be consulted for more detailed information. Supporting evidence of the efficacy of borax is provided by the issue to the U.S. Army of packages of borax which bear the following instructions: "In pit latrines apply in the ratio of 1 lb. per 8-hole latrine every 5 days. If the pit contents are moist, apply the dry powder directly by dusting it evenly over the surface. If the pit contents are dry, use just sufficient water to dissolve the borax and then spray pit contents. Do not use an excessive amount of water. If needed borax may be used in trench latrines in the same manner as in pit latrines. To control fly-breeding around garbage stands and similar areas powdered borax should be dusted lightly over the moist earth after each cleaning of the area. On compost piles use borax in the ratio of 1 lb. per 8 bushels of manure. The compost should be thoroughly wet when the borax is applied. *Caution*—For external use only. Store away from food."

Cracked Fingers

Dr. W. MURRAY (Hessle, Yorks) writes: I wonder if the doctor who writes for advice about cracked fingers (Sept. 9, p. 361) has ever heard of a method of treatment which was old when I started practice 53 years ago and which I have used both personally and in my practice with unfailing success ever since. It consists simply in filling the cracks with cobbler's wax. You obtain a small lump of cobbler's wax, and to keep it from sticking to everything you put it in a very small chip ointment box without a lid. You dry the crack, using alcohol if you don't mind the momentary stinging pain. You heat a large-sized needle in the flame of a spirit lamp to a dull-red heat. With the hot needle you take off the surface of the wax as much as you can get on to the needle and coax it by manipulating it in the flame until a drop of liquid wax hangs from the point of the needle, just as a Chinese manipulates his pellet of opium before he transfers it to the bowl of his pipe. You then open the crack as wide as you can and lay the drop of molten wax along the crack, using the needle, which can be gently heated several times, to get the wax well into the crack. Then press the wax-filled crack into the warm palm of the opposite hand. The result is just as if a piece of old-fashioned black silk court-plaster had been applied. The pain goes immediately. If the wax gives way before the crack is quite healed, repeat the process. Celluloid dissolved in acetone and amyl acetate can be used in the same way. The consistency has to be that of a thick syrup. This takes a few minutes to dry.

Correction

We regret that a mistake crept into the note by Lieut.-Col. G. Wilson (Oct. 14, p. 520) which made nonsense of his opening words. What he wrote was: "Another very good *reason* for cracks on the finger-tips, which are very painful and difficult to heal, is the use of methylated ether to cleanse the skin after the removal of plaster."